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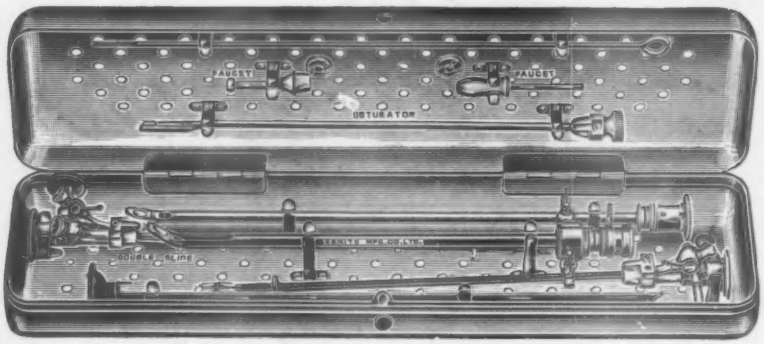

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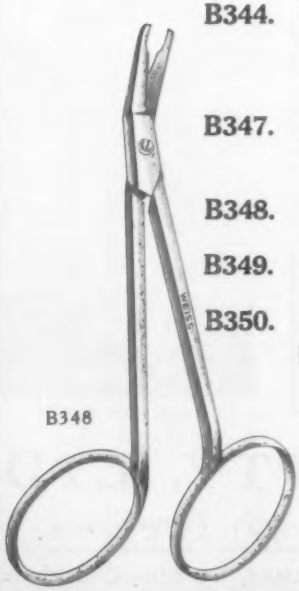

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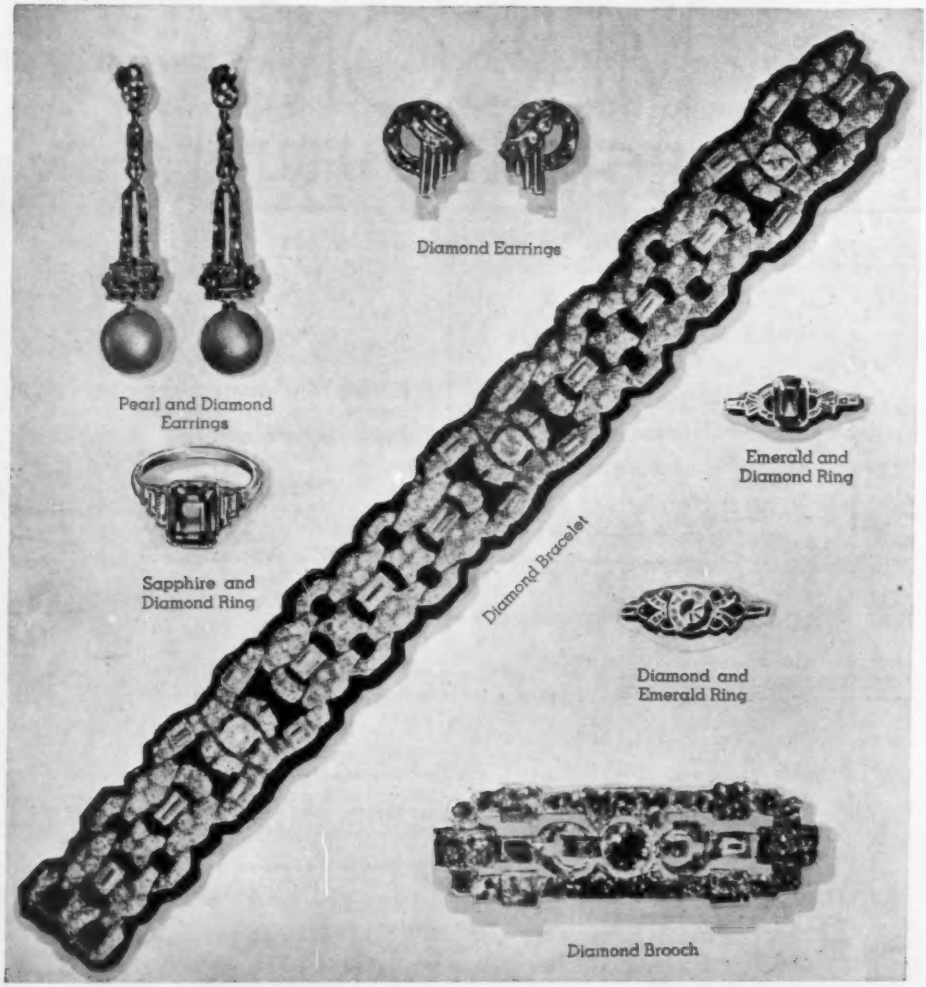

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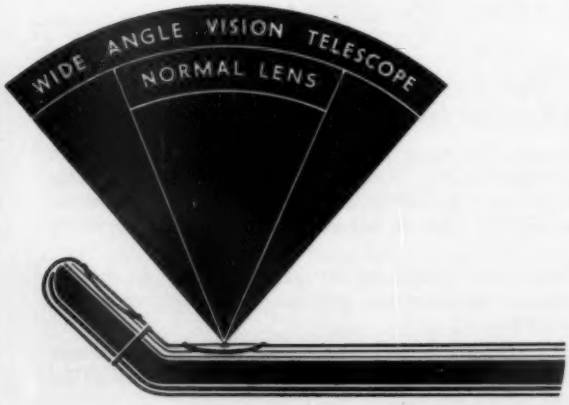

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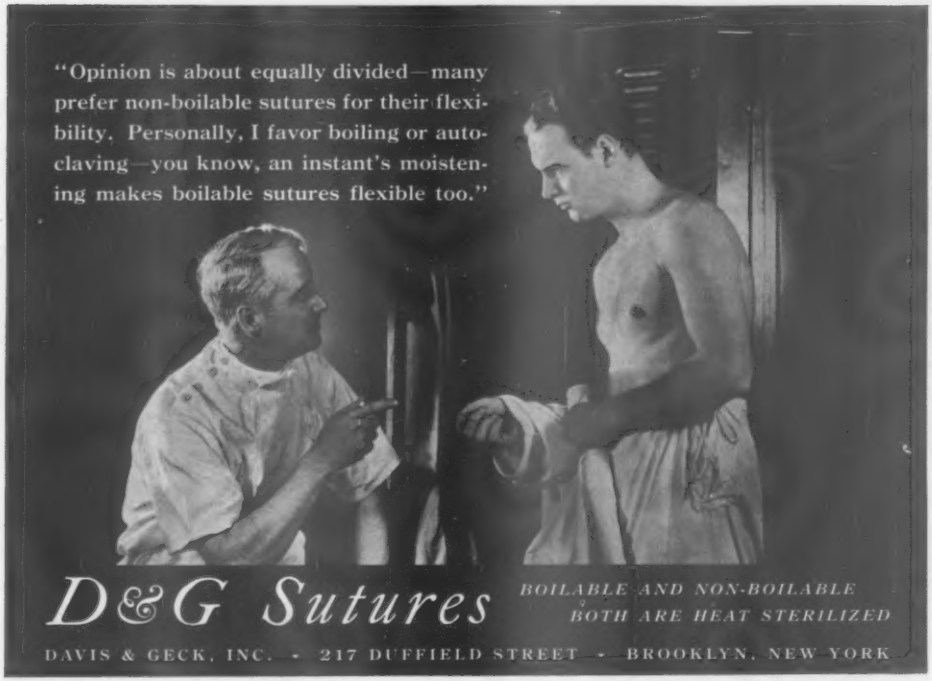
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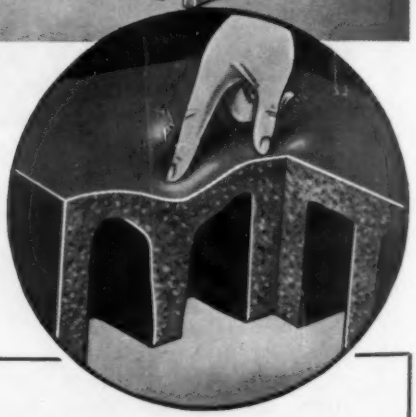

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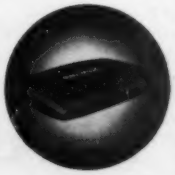

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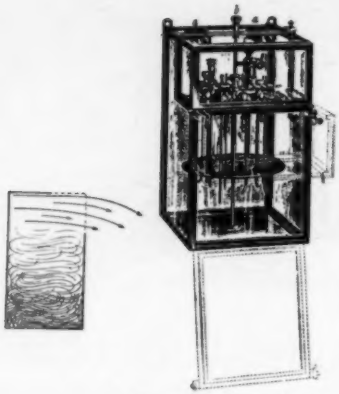

Figure I.

Glass-Walled Cupboard for the Germ-Free Preservation of Electrical Optical Apparatus.

(*Der Chirurg*, February 1, 1936, page 120.)

In the Urological Department of the Rudolf Virchow Krankenhaus, Berlin, a glass-walled cupboard of the design pictured in Figure I is used for the storage of cystoscopes and other delicate optical apparatus. Formalin vapour is the sterilizing agent employed. The cupboard is so constructed that an instrument required can be seen at once, and can be removed without release of any appreciable quantity of the formalin gas.

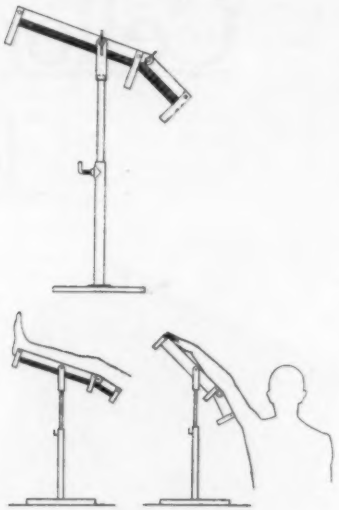

Figure II.

A Splint for Keeping the Leg or the Arm in Continuous Elevation.

(*Der Chirurg*, October 15, 1935, page 744.)

Diagram number 1327205, by Hans Siegler, München. The drawings (Figure II) show how the splint is used for elevating the arm or the leg.

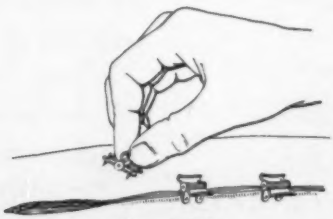

Figure III.

A Skin Clamp.

(*Der Chirurg*, March 1, 1936, page 191.)

Figure III illustrates a form of skin clamp made of rustless steel, armed with a little spring. It is used for clamping the edges of the wound together. The illustration shows how it is applied.

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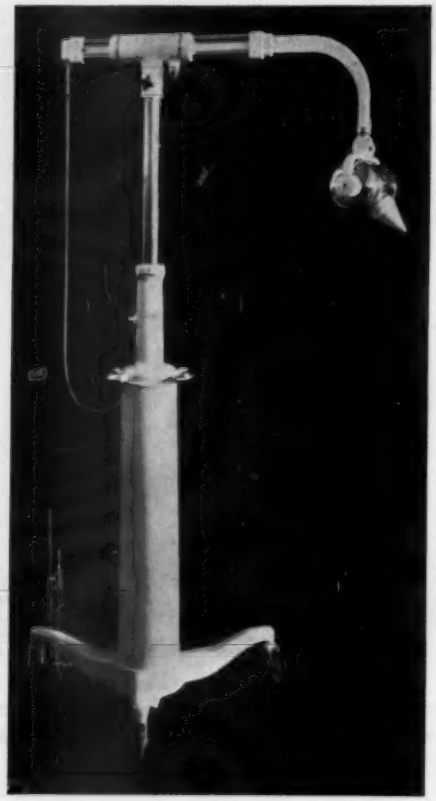

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The Australian and New Zealand Journal of Surgery

JULY, 1936.

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VOL. VI. JULY, 1936. No. 1.

THE GEORGE ADLINGTON SYME ORATION.[1]

THE FIRST FIFTY YEARS OF MEDICINE IN AUSTRALIA.

By L. COWLISHAW,
Sydney.

THE oration which I have the honour to deliver this evening was founded some years ago by the widow and family of a great surgeon and an even greater man—George Adlington Syme.

Of Scottish parentage, Syme was born in Nottingham in 1859, and came out to Melbourne with his parents in 1862. In 1873 he entered Wesley College, matriculated in 1877, and graduated in medicine at the University of Melbourne in 1881. The details of his life and work are well known to you all. I can add no personal touch, as, unfortunately, I made contact with him only for one short week during the war years.

When after a career of great distinction and a lifetime filled with many interests, he passed to his rest, he had not quite completed seventy years. We have all voiced, perhaps subconsciously, the prayer so beautifully expressed by the great American physician, Silas Weir Mitchell:

> Yes, I have had, dear Lord, the day;
> When at Thy call I have the night,
> Brief be the twilight as I pass
> From light to dark, from dark to light.

Syme's twilight was brief: taken ill on Friday, April 12, 1929, he died on the following Friday night.(1)

When the Council of your College honoured me with the invitation to deliver the fourth George Adlington Syme Oration, they suggested that, as I had been interested for many years in the history of medicine, I should choose as my subject some portion of the history of our

[1] Read at the annual meeting of the Royal Australasian College of Surgeons, March, 1936.

profession in Australia, and so tonight I propose to tell you about the first fifty years of medicine in Australia.

I think I may say that the man whose memory we honour tonight would have approved of my choice of subject. Syme during his forty-eight years of service helped to make medical history in Australia. The great aim of Syme's life was to place the surgical profession in Australasia on a sound footing, and he lived long enough to see the fulfilment of his dreams in the foundation of the Royal Australasian College of Surgeons in 1927.

To attempt to tell fully the history of fifty years of our profession in the fifty minutes at my disposal this evening would be impossible, and so you must be content if I tell you something of the early struggles of our predecessors. By sheer grit in the face of famine, isolation, and a lack of all those supplies and aids which the modern surgeon has at his elbow, they healed and comforted the sick, and gradually converted the little insanitary convict settlement on the shores of the Tank Stream into a healthy town, and laid the foundations of our great modern city of Sydney, one of the healthiest cities in the world.

If, to our modern eyes, these doctors were rough and quarrelsome and poorly trained, we must remember that even in the homeland at this period manners were coarse. In the eighteenth century, the era of the Georges, the penal code was brutal in the extreme, and attendance at floggings and executions was a popular entertainment.

Medicine was preparing for the great advances which were still more than fifty years distant. Vaccination was in its infancy; Howard, the philanthropist, was busy with his reforms in the treatment of prisoners; and health conditions in the navy and the army were slowly being improved by the efforts of John Pringle, James Lind and Gilbert Blane. The standard of medical practice was poor; blood still flowed in streams from the victims of venesection, the stomachs of unfortunate patients were revolted by nauseous potions, and their bowels were assaulted by heroic doses of violent purgatives. Think for a moment of surgical practice without anæsthesia, asepsis, adequate nursing and the heavenly comfort brought to the patient after operation by the hypodermic injection. Without any of these aids, the early colonial surgeon did his work, and did it well, separated from his native land by a voyage of nine months.

Medical history in Australia may be said to have begun with the arrival of Governor Phillip and the First Fleet in 1788. But before I tell you about the medical men in the First Fleet, I think we ought to spare a few minutes for two men who have been called "the harbingers of the medical profession in Australia".[2] With Captain Cook in the *Endeavour* came as surgeons William Broughton Monkhouse and William Perry. Cook's voyage has long been looked upon as a triumph of naval hygiene, inasmuch as there was not a single death from scurvy during the voyage, although several of the crew, including Surgeon Perry, were attacked.

All the historians have given the credit for this great feat to Captain Cook alone, but I think when you read carefully the accounts of the voyage and the preparations made for it, some at least of the credit should be given to Surgeons Monkhouse and Perry.

On the return voyage Monkhouse died at Batavia. Cook tells us: "Mr. Monkhouse, our surgeon, a sensible skilful man, fell the first sacrifice to this fatal country; a loss which was greatly aggravated by our situation." Of Perry, after this voyage, we hear no more.

These two men, who were the first British surgeons to land on our shores, should not be entirely forgotten by the medical profession. While the *Endeavour* was in Botany Bay, a poor sailor lad, Forby Sutherland, immortalized himself in his death, being the first British subject to be buried in Australia, and to this day Point Sutherland in Botany Bay keeps his memory green; but we look in vain for any memorial to Monkhouse and Perry. They, like many another naval surgeon, did their duty well, yet to quote the words of Sir Thomas Browne: "They must be content to be as though they had not been, but to be found in the register of God, not in the record of man."

Eighteen years elapse, and we land with Governor Phillip at Sydney Cove on January 26, 1788.

Port Jackson must have been a very lovely place one hundred and fifty years ago, before so many of its beauties had given way to modern improvements. Nature had done its work well, and the primitive inhabitants were too busy fishing and hunting for a living to destroy and disfigure the landscape. The beauty and security of our harbour made a great impression upon John White, the Surgeon-General of the First Fleet. Let us hear what he has to say:

> Port Jackson I believe to be without exception the finest and most extensive harbour in the universe, and at the same time the most secure, being safe from all winds that blow.

John White[3] had served on the *Irresistible*, and had been highly commended as "a young man of great credit in his profession". He has left us in his "Journal of a Voyage to New South Wales" a graphic account of the long voyage of the First Fleet and many interesting glimpses of life in the infant settlement.

In the First Fleet with John White came several surgeons, but of these only four concern us tonight: Thomas Jamison, Denis Considen, William Balmain and Thomas Arndell.

The mortality on the voyage had been remarkably low: only thirty-six men, four women and five children died amongst the convicts; only three amongst the marines, while not a single member of the crews of the eleven ships lost his life. This low mortality is an everlasting testimonial to the skilful manner in which the naval surgeons, supervised by White, looked after their people. Compare these figures with those of the voyage of Vasco da Gama round the Cape, during which the Portuguese admiral lost one hundred out of one hundred and sixty of his crew. Compare them again with the figures of the expedition

of Admiral Anson in later times in which at one time eight to ten sailors perished every day from the disease which has been well named the "calamity of sailors".

White and his colleagues found themselves in charge of a mixed population of one thousand and thirty souls. Tents for the sick were erected on the western side of the Cove on the line of George Street and about the location of the old Argyle Cut. Soon after the landing, an epidemic of dysentery broke out, and, in addition, owing to a shortage of green vegetables, scurvy reared its head. The tents were gradually replaced by wooden huts, and these huts formed the first hospital in Australia.

Once again we go to White's journal for a description of the local conditions:

> The laboratory and sick tents were erected, and, I am sorry to say, were soon filled with patients afflicted with the true camp dysentery and the scurvy. More pitiable objects were perhaps never seen. Not a comfort or convenience could be got for them, besides the very few we had with us. His Excellency, seeing the state these poor objects were in, ordered a piece of ground to be enclosed for the purpose of raising vegetables for them. The seeds that were sown upon this occasion, on first appearing above ground looked promising and well, but soon after withered away; which was not indeed extraordinary, as they were not sown at a proper season of the year. The sick have increased since our landing to such a degree that a spot for a general hospital has been marked out, and artificers already employed on it.

Misfortune seemed to dog the infant settlement. The sheep and fowls which they had brought with them had mostly died during the voyage. Of the survivors, five sheep which were landed at Sydney Cove were killed by lightning, and by July nearly all the live stock were dead, so that the country was looked upon as being unsuitable for sheep. To crown all these misfortunes, four cows and two bulls, tiring of town life, went bush, and were discovered only seven years later, when their numbers had increased to sixty head of fine cattle.

For two and a quarter years the people of Sydney had no fresh meat, no milk and no butter, and for several years the colony fought the spectre of famine.

In the next year we hear of Assistant Surgeon William Balmain.[4] Governor Phillip, while interviewing some natives, received a spear wound; the spear, entering just above the collar-bone, came out at the back of the neck. The Surgeon-General being away at the Hawkesbury, Balmain extracted the weapon, and the patient was well in ten days. In 1789 an outbreak of smallpox occurred among the natives, but the white population escaped, with the exception of one seaman, who contracted it and died.

The arrival of the Second Fleet in 1790 was hailed with delight by the colonists, but their joy was short-lived. The voyage had been disastrous; out of a total of seventeen hundred and seventy-three on four ships, five hundred and thirty-one convicts had died. Four hundred and ninety-one patients were put ashore, some poor creatures dying in the boats as they were being landed. Such an inrush of patients would

come as a shock to any of our modern hospitals, so the hands of the local surgeons must have been very full. Fortunately, the ships had with them a temporary hospital, which was erected near the existing one.

On July 13 there were 488 persons under medical treatment at the hospital. During the last year of Phillip's *régime*, which ended in 1792, the population had increased to 3,739, and the mortality for that year was 478, or somewhat over 10%.

With the Second Fleet came the notorious New South Wales Corps which was to cause so much trouble during the next eighteen years. With them came as surgeon John Harris, who was destined to play many parts in the history of the colony until his death in 1838. John Harris was the first military doctor in Australia. His descendants are still with us, and his name is commemorated in Harris Street, Ultimo, and Harris Park.

To return to the Surgeon-General, John White.[5] Greatly interested in botany, he was the first to describe many of the Australian flora and fauna; and in 1788 he dispatched many of the specimens he had collected to England, where their novelty aroused great interest.

While he did good work for the settlement, John White was unsuited for pioneer life. His was far from being a cheery personality, and he entertained a very poor opinion of the future of New South Wales. "The wood is bad, the soil is light, poor and sandy, nor has it anything to recommend it", "a country and place so forbidden and so hateful as only to merit execration and curses", are samples of the hard things he said about our country. By 1794 the privations and hardships had begun to tell on his health, so in that year he obtained leave of absence and departed to England, never to return.

In 1796 William Balmain[4] was appointed Principal Surgeon. To White and Balmain belongs the credit (or is it discredit?) of having fought on August 12, 1788, the first duel on Australian soil. Not much damage was done, but the enmity between the two men endured throughout their association.

Of the other First Fleet surgeons, Denis Considen[6] shares with White the honour of being the first to utilize the astringent gum of the eucalyptus, to extract the oil, and to make use of it for medicinal purposes. Considen's health broke down, and he returned to England in 1793. Thomas Arndell resigned in the same year and took to farming. He was one of the pioneers of the Hawkesbury and Windsor district, and at Cattai Creek some of his descendants are still to be found.

In 1790 came D'Arcy Wentworth, a strange mixture of good and bad. Wentworth, who came of a noble family in the north of Ireland, emulated in his youth the deeds of Dick Turpin, and was on four occasions indicted for highway robbery. On the last occasion at the the Old Bailey it was announced that Wentworth was proceeding to Botany Bay as assistant surgeon on a convict fleet.

On his arrival he was sent to Norfolk Island, where his famous son, William Charles Wentworth, was born. Returning to Sydney,

Wentworth served at Parramatta and again at Norfolk Island. In 1811 he succeeded Thomas Jamison as Principal Surgeon during the reign of Governor Macquarie, who had a high opinion of him.

It is difficult at this distance of time to form a true estimate of the character of D'Arcy Wentworth. Many of his actions, judged by the standards of today, were more than questionable. Both he and Balmain were deeply interested in the rum traffic. When Governor King attempted to stop the traffic in 1800, Balmain had in his possession 1,400 gallons and Wentworth 3,000 gallons. He undoubtedly trafficked in hospital supplies, and his interest in the tender for the building of Sydney Hospital is open to grave suspicion. Yet, in spite of all these facts, Macquarie appointed him Chief of Police, with wide magisterial powers, and writes of him as "a Man on Whose Rectitude of Conduct and Zealous Attention to his Duties I could safely rely".

Wentworth resigned the position of Principal Surgeon in 1818. The remaining years of his life were uneventful. He died at his house, "Homebush", in 1827. From his house our modern suburb derives its name.

Let us retrace our footsteps to the year 1795, when Captain John Hunter, who succeeded Phillip, made the voyage from England in His Majesty's Ship *Reliance*. With him were two young men who were destined to write their names widely on the map of Australia. One of them was a member of our profession, Surgeon George Bass,[7] the other then a midshipman, later to become Captain Matthew Flinders.

The life of George Bass was a romance of bravery and adventure which ended in tragedy. Brought up to be an apothecary, Bass early developed what John Masefield calls "sea fever", and he might well have been the original of the lines:

> I must go down to the sea again, for the call of the running tide
> Is a wild call and a clear call that may not be denied.

Abandoning his pestle and mortar and his pills, Bass obtained a commission as surgeon on the *Reliance*. On the voyage, a lifelong friendship sprang up between him and Flinders, who in the introduction to his book writes thus about his friend:

> In Mr. George Bass, the surgeon of the *Reliance*, I had the happiness to find a man whose ardour for discovery was not to be repressed by any obstacles, nor deterred by any dangers; and with this friend a determination was formed of completing the examination of the east coast of New South Wales, by all such opportunities as the duty of the ship and the procurable means could admit.

The story of how the two friends embarked in the little *Tom Thumb*, only eight feet long, belongs to the great stories of exploration. How Bass in a whale boat rounded Wilson's Promontory and discovered Western Port and Bass Strait, and how the two later on circumnavigated Van Diemen's Land in the *Norfolk*, I have not time to tell you tonight. You must read it for yourselves.

In 1803 Bass sailed away from Sydney to Peru, with the ostensible object of importing the alpaca into Australia. He was never heard

of again. Rumour has it that he was captured by the Spaniards, and ended his days as a prisoner working in the mines. If this is true, he must have dreamed many a time of the golden sunlit beaches of the South Coast and the blue haze of the coastal ranges. We know very little of the medical skill of George Bass, yet the medical profession is proud to claim him as one of its own.

We pass now to William Redfern.[5] The story of Redfern is the story of a man who, in the face of circumstances which would have crushed a lesser man, fought his way up to a leading position in the community and died honoured and respected by all his contemporaries.

In 1797, when nineteen years of age, Redfern was serving as assistant surgeon on His Majesty's Ship *Standard*. At this time the conditions under which the sailor lived and fought were deplorable. His food consisted for the most part of weevily biscuit and salt junk. His quarters were dark, damp and without ventilation. His pay was poor, and his pension money negligible. All these grievances finally boiled over in the mutiny at the Nore. Redfern, expressing sympathy with some of the complaints of the men, was court martialled and sentenced to be shot. On account of his youth he was reprieved, and after spending four years in prison, he asked to be sent out to Australia. He landed in Sydney at the end of 1801 as a convict.

Almost immediately he was sent to Norfolk Island, and acted as assistant surgeon. In 1803 he was granted an absolute pardon. His work in what has been called "that compendious and concentrated hell, Norfolk Island", earned him the greatest praise from the authorities, and in 1808 Lieutenant-Governor Foveaux recommended him for the position of assistant surgeon with duty in Sydney.

At this time Redfern was not in possession of any certificate or diploma. Before entering the Navy he had passed the examination of the Corporation of Surgeons in London, but did not receive a diploma. In order to prove his competency he offered to submit to a medical examination. Of course, at this time there was no university or board with power to conduct examinations or confer degrees, so the Lieutenant-Governor constituted a Board of Examiners, consisting of the Principal Surgeon, Thomas Jamison, the Military Surgeon, John Harris, and an assistant surgeon, William Bohan. After Redfern had successfully passed the examination, the board issued the first diploma ever granted in Australia, and on September 1, 1808, Redfern became the first Australian graduate in medicine.

Macquarie seems to have liked Redfern from the first, and soon after his arrival in 1810 wrote to Viscount Castlereagh asking for confirmation of Redfern's appointment, and in 1811 in a dispatch the Secretary of State gave his approval.

During the stormy *régime* of Governor Bligh, hospital conditions went from bad to worse. Bligh, in his usual autocratic way, interfered with the surgeons, and ordered patients into the hospital and sent them back to work without reference to the medical staff. Quarrels between

Jamison, D'Arcy Wentworth and Mileham, the other surgeon, with Bligh were continuous. Bligh finally court martialled Wentworth and suspended him, and dismissed Jamison from the magistracy, and would have suspended him as well if he could have found any surgeon willing to take his place. The names of Wentworth and Mileham were attached to the letter to Major Johnston asking for the removal of Bligh. Redfern, on the contrary, seems to have been friendly with Bligh, and was in attendance on the Governor's daughter when the soldiers came to arrest her father.

During this period the population was growing steadily; convicts were being emancipated and free settlers were arriving. The government doctors were fully occupied with their official and convict patients. Private practitioners did not exist. Who was to look after the civil population? The official doctors were not allowed private practice or private fees, but if they refused to attend cases of emergency there was an outcry. Two of the surgeons were court martialled for refusing to attend obstetric cases, one of them being John Savage, who has the honour of having introduced vaccination into Australia. As a result of this happening, the medical staff was granted the right of private practice.

In 1804 Martin Mason, who had served as an assistant surgeon, commenced practice at the Hawkesbury, and thus was the first private practitioner in Australia.

With the arrival of Macquarie, Redfern gained a firm friend, and this friendship led to much friction between the military and Redfern. Macquarie, no doubt sincere in his wish to help those men who had proved their worth after their emancipation, invited the emancipists to meet socially the official classes and free settlers. This action of the Governor divided the colony into two camps, and Redfern, the most outstanding man among the emancipists, although married to the sister-in-law of the one of the military officers, was the centre around which the controversy raged.

Redfern met with his greatest disappointment when, in spite of the support of Macquarie, James Bowman was in 1818 appointed Principal Surgeon over his head. Bitterly hurt, Redfern resigned his official position and devoted himself to private practice. There is no doubt that Redfern owed his defeat mainly to the influence of the anti-emancipationist party with the authorities in London.

Deeply resenting the rejection of his nominee for the position of Principal Surgeon, Macquarie appointed him a magistrate of the colony. Once again the opposition rose in full cry.

> The policy of the Governor in fraternizing at all with reformed convicts is bad enough and to be condemned by every gentleman; but when he attempts to raise one of the most notorious of them to the magistracy of the whole colony, a vigorous protest must be made.

These are the words of Mr. Commissioner Bigge. Appeal to the Home authorities followed, resulting once again in the discomfiture of Macquarie and Redfern.

The year 1817 was to see the founding of the first bank in Australia —the Bank of New South Wales. Redfern, together with D'Arcy Wentworth and John Harris, was among its founders. Some years later the *Sydney Gazette,* owned by a Mr. Robert Howe, published several articles commenting adversely on the management. In one of these, hard things were said about Redfern. Having read the offending article, Redfern rose in his wrath, seized his horsewhip, and sallied forth, seeking revenge. He ran the editor to earth at his home and proceeded to chastise the offender. Help arriving, the doctor was disarmed, and, appearing in court, escaped with a fine of thirty shillings. But the victory did not ultimately rest with Redfern, as, some days later, having cooled off and feeling that possibly he had been somewhat hasty, he met the editor's wife in George Street and began to express his regrets. Mrs. Howe, being, as a contemporary tells us, a commanding woman who wasted no time in wordy argument, broke her umbrella in pieces over the head and shoulders of the doctor, who made a hasty retreat.

In 1821 Redfern visited England as a delegate of the emancipists, and was successful in getting some of their disabilities removed. He visited his homeland again in 1825, and finally in 1828.

Redfern had easily the largest practice in the colony in his time. Socially the anti-emancipationists may have objected to meet him, but in time of sickness they sought his aid. His reputation as an obstetrician was very high, and he was greatly sought in consultation by his colleagues. Gradually becoming more and more interested in pastoral pursuits, he gave up practice in 1826. Apart from his original estate in our present suburb of Redfern, his favourite abode was Campbell Fields, his estate near Airds; and here he was one of the pioneers of the wool industry, introducing merino sheep, and of viticulture, importing grape vines from Madeira.

Redfern's philanthropic works were many. He was one of the founders of the Benevolent Society, and did much to help the aborigines at a time when the hand of every settler was against them.

He died in Edinburgh in July, 1833, at the comparatively early age of fifty-five. It is said that he was bluff and brusque in manner, but even his enemy, Mr. Commissioner Bigge, had to own that "Mr. Redfern's skill was acknowledged and that, aided by great assiduity and good natural talents, he had overcome the want of early study and experience". If we accept Macquarie's estimate of his character, then Redfern was indeed a man of whom it may be truly said that "he so dealt with men in this world that he was not afraid to meet them in the next".

It did not take long for Macquarie to realize that the erection of a new hospital was imperative. Some relief had been afforded by the erection of a special hospital for the military in 1797 on the site of the present Fort Street School, but the accommodation at the old hospital was quite inadequate for the treatment of the sick convicts and the free poor.

Macquarie wasted no time in calling for tenders. His hospital was to be a fine building, and it is said that Mrs. Macquarie drew the plans. To provide a site, Macquarie chose the ridge south of the Government House of his day, and formed a new street, which he named after himself. The difficulty now arouse: how were the contractors to be paid? The Colonial Treasury was empty, coinage was scarce, the principal currency being rum, and the need of the sick poor was great. The contractors expressed their willingness to accept payment by a three years' monopoly of the rum traffic and permission to import 45,000 gallons of spirit, duty thereon to be paid after six months. After some bargaining and minor concessions, the contract was signed on November 6, 1810. The fact that D'Arcy Wentworth, the Principal Surgeon, was one of the contractors caused much comment. The Home authorities, on hearing of the terms of the contract, expressed in no measured terms their disapproval, but it was too late and the work went on. On Wednesday, October 30, 1811, the foundation stone was laid with much ceremony.

For the next five years the work went on slowly, being delayed at times owing to friction between the government and the contractors. On March 3, 1816, the contractors notified the government that the building was finished, but it was not until the middle of the year that the hospital was occupied.

It may interest you if I devote a few minutes to a description of the Sydney in which Balmain and Redfern lived and worked when the hospital was first opened for the reception of patients. I quote from an authority on the early days.

In Sydney we find that jail gangs did the scavenging; oil lamps and home-made tallow candles supplied light for the homes, supplemented in bush circles by iguana oil and possum fat; fires were ignited by the aid of tinder boxes, flint and steel, or sun-glasses. The homes of the poor had brick floors, when not of trodden clay. Cups, mugs, spoons, platters, bowls and saucers were of iron, tin or wood.

People were not food faddy; rhubarb pie, pumpkin pie, or wholemeal bread, baked in dripping, was considered a luxury for Sunday. As a rule, the inhabitants were hard drinkers, crotchety, narrow minded, ignorant and often tyrannical, impressing their narrow views on each batch of new emigrants. Women shared in laborious duties. Their daughters, compelled to live in the back-wash, became bashful and awkward in demeanour. At five o'clock on Sunday evenings promenaders wended their way to Hyde Park to listen to the band of the 46th Regiment, while interchanging small talk and scurrility.

A not very pleasing picture; but after the peace following the Napoleonic wars came a flood of English emigrants of a better class, and these diffused a humanizing influence over all with whom they came in contact.

The first staff of the hospital consisted of D'Arcy Wentworth as official head and William Redfern as assistant in personal charge of the

patients. In the following year Mr. R. W. Owen was added to the staff, and so, after a very stormy infancy, Sydney Hospital entered on its long career of service.[9]

To these surgeons in the year 1817 was added Henry Cowper as assistant to the hospital at a salary of £25 *per annum* and a free ration; and he thus became the first junior resident medical officer in Australia. In 1814 Cowper had been apprenticed to Redfern, and attended the practice at the old hospital; and in this way another record is held by Cowper, as the first clinical student in Australia. He was not the first medical student, as James Sheers antedated him by one year, having been legally apprenticed to Redfern in 1813, but he died in 1814. As Cowper was only fourteen when he started on his medical career, he must be one of the youngest students in Australia to have studied the medical art. One more record before I leave Cowper. In 1821 he sailed to England on His Majesty's Ship *Dromedary* to undertake post-graduate study, and in the *Sydney Gazette* of June 5, 1823, we read:

> We have the pleasure to say that by the ship *Lusitania* has returned to the Colony the eldest son of the Reverend William Cowper, Mr. H. Cowper, Member of the Royal College of Surgeons in London.

In 1820 we find Cowper named as assistant surgeon, which indicates that he must have passed his qualifying examination in Sydney and, proceeding to England, became the first Australian to obtain a post-graduate diploma.[10]

Conditions in the hospital for the first few years were rough and primitive in the extreme. The nurses came from the dregs of the population, and were dissolute and pandered to the worst instincts of the patients. To add to the general confusion, the hospital was usually overcrowded—into a ward intended to hold twenty were compressed as many as forty-two patients. The commonest disease was dysentery, and as no lavatories were provided in the hospital itself, and the patients were locked in the wards overnight and left to their own devices, the condition of the wards in the morning may be left to the imagination. Treatment would seem to have consisted for all cases in bleeding, cupping and calomel. Every patient received the same dietary, namely, one pound of meat and one pound of flour *per diem*. All food was cooked by the patients themselves in the wards.

Surgical operations seem to have been few in number and were performed in a room set apart; we hear of three amputations in the the first year and only one operation in the next two years.

The authorities seem to have abandoned any attempt to keep the male and female patients apart, and Balmain, the Principal Surgeon, expressed the opinion that as it was well known that all the female patients were suffering from venereal disease, this should be sufficient discouragement to any of the male patients who might wish to interfere with them.

This condition of affairs continued until the appointment of William Bowman in 1819, who in the years 1819 to 1836 completely reformed and reorganized the medical services of the hospital.

The twelve years' reign of Lachlan Macquarie brought about great changes in Sydney. Apart from the new hospital, Macquarie built many fine buildings, and when he sailed away in 1821 the convict settlement was well on the way to become the great modern city of Sydney. It has been truly said that "into a community which consisted mostly of the profligate and the damned, Macquarie brought justice and hope".

From 1820 onwards the outstanding medical figure in Australian history is that of William Bland,[11] the friend and right-hand man of William Charles Wentworth. Until his death in 1868, Bland was in the forefront of every movement for the advancement of the colony. From his arrival in 1814 until he emerged from Parramatta Gaol in 1819, after serving a sentence of twelve months for libelling Governor Macquarie, Bland was always in trouble; but from 1820 he was a changed man and devoted himself to humanity and to work for the improvement of the condition of the poor and needy. A full length biography of William Bland is long overdue. Tonight I can only devote a few minutes to this greatest of Australian doctors.

Bland, whose father was a leading obstetrician in London, entered the Navy as a surgeon and served in the *Hesper* in the Persian Gulf. The heat and monotony of the cruise evidently proved too much for the temper of Mr. Case, the purser, and he had quarrels with two of his brother officers, but these were patched up. One evening, after the ship had returned to Bombay, the purser, who had evidently been brooding over his wrongs, while at mess made disparaging remarks about one of his former opponents, Lieutenant Randall, who was not present. Bland protested as there were visitors present, and Case promptly challenged him to a duel. They met on the following morning, with fatal results for the purser, and ultimately fortunate results for Australia, for Bland, who was later to earn the title of "the good Samaritan of Australia", came out to Sydney in 1814 under a sentence of seven years for killing a fellow officer.

On his arrival in Sydney, Bland was appointed professional prisoner in charge of the lunatic asylum at Castle Hill. The following year he was pardoned and commenced private practice, and thus in 1815, the year of Waterloo, became the first private practitioner in Sydney.

It was not long before Bland took a leading part in the struggle for political freedom. Endowed with a gift for writing, he published many pamphlets in aid of the cause, but in 1818 his feelings carried him away and he lampooned Governor Macquarie in some verses which touched the Governor on the raw. Macquarie loved to attach his name to his buildings and to name places after himself. I will quote the

verse which earned for Bland twelve months in Parramatta Gaol and a fine of fifty pounds:

> Thy puerile, weak ambition that I see
> That prompted thee to mark thy name on stone,
> And bids thee sigh and languish to be known
> Like some rude younker, who with charcoal scrawls
> And marks his name upon the school-house walls.

His sojourn in Parramatta Gaol seems to have had a chastening effect, and from now on, while his enthusiasm for the cause of freedom never slackened, his methods were more tactful, and in the fight for parliamentary representation he stood at the right hand of William Charles Wentworth.

In 1843, when Wentworth and his friend Bland headed the poll in the election for the first Legislative Council, the former expressed in no uncertain terms his appreciation of his friend:

> No man has ever served a country in a purer spirit of patriotism; no man ever more justly deserved the gratitude of a generous people than does Dr. Bland.

To follow Bland in all his good works would take us far beyond our fifty years. I can only mention his activities up to the formation of the Australian Patriotic Association in 1835. In 1820 was founded the Benevolent Society, and from its beginning he was the society's surgeon. In 1826 the Sydney Dispensary was founded, with Bland as the prime mover. The object of this dispensary was to provide treatment for the sick poor in their own homes, and to have an out-patient department for those not confined to bed. This institution merged into the present Sydney Hospital in 1845.

In 1832 a new hospital was built for the Benevolent Asylum, and here, in the room set apart as a morgue, Bland performed many and varied operations. In spite of this rather depressing operating theatre, he could report that "there have been no deaths from any operation performed in this institution during the last five years". In 1832 he performed the first operation for aneurysm in Australia, operating upon and ligating an aneurysm of the innominate artery. This operation had been first performed by the great American surgeon, Valentine Mott, in 1818, and I believe that Bland's operation was only the third occasion on which it had been attempted.

The case is fully reported in *The Lancet* of October 20, 1832. This must be the first operation performed by an Australian surgeon to be described in a medical journal. The patient, whose name was John Mullen, lived for eighteen days, and, I think, would have recovered if less enthusiasm had been shown for bleeding him—during those eighteen days he was bled fifteen times, and eight pints of blood were taken from his veins. Bland held a *post mortem* examination, but could not find anything to account for the fatal result, and attributed the patient's death "to a want of decision on the fourteenth and fifteenth days after the operation, in not having bled the patient with a more liberal hand".

This must also be the first *post mortem* examination held in Australia to be reported in the medical Press.

Education in Sydney owes much to Bland, for in 1825 he, with certain other gentlemen, founded the first grammar school. This only lasted for a few years, and in 1830 the Sydney College took its place, ultimately to be merged in the University of Sydney.

Bland was fortunate in his death. He worked until he had attained the great age of seventy-nine up to within a fortnight of his death, and then pneumonia, "the friend of the aged", brought to its close a long career of service. I cannot end my account of him in any better manner than by quoting Henry Kendall's verse:

> And, having battled to the end,
> 'Gainst evil speech and deeds of dust,
> He sleeps—the statesman, scholar, friend—
> The slumber of the just.

After 1820, Australian medicine passes out of its infancy into a boyhood, vigorous and full of promise. Under the able guidance of James Bowman, Sydney Hospital was reorganized, and many abuses were done away with, while trained medical men began to arrive from overseas and to spread throughout the land.

My fifty years of Australian medical history are finished. Tonight we have endeavoured to prove false the words of John Dunmore Lang, who said on one occasion:

> The pioneers of a country or of a great undertaking are like the foundations of a great city—soon built over and forgotten.

There are other early medical men about whom I might have spoken —Charles Throsby, surgeon and explorer; Jacob Mountgarret, pioneer surgeon of Hobart Town; Thomas Mitchell, the father of the founder of the Mitchell Library; Alexander Collie, surgeon of the Swan River settlement, and others—but we will

> Question them no more,
> Tired men after the fight;
> They have paid all Life's score,
> And gone to the night.
> Feasting and weeping over,
> Closed with Death's kiss and Life's quarrel,
> Leave them alone at last
> Under the laurel.

The story of the next hundred years has yet to be written, for the medical profession in Australia has yet to produce its historian. The opportunity is there for the man with sufficient leisure and the necessary historical enthusiasm. I am sure it would be a tale well worth the telling.

The medical profession has made great progress during its lifetime of one hundred and fifty years in Australia, but I venture to say that of one aspect of our medical life we have no reason to be proud. I am thinking of our medical libraries. Australia lags far behind other countries in this respect, and many small towns in Canada and the United States would look with pitying eyes at our collection of medical

books. We have yet to find a Mitchell or a Dixson to endow our medical libraries.

Might I suggest to our wealthy fellow citizens, both lay and medical, that a good way to lessen the amount to be paid in probate and other taxes is to endow a medical library. Incidentally, immortality may thus be attained. In the words of that great physician, Sir William Osler:[12]

> The organization of a library means effort, it means union, it means progress. It does good to men who start it, who help with money, with time, and with the gift of books. It does good to the young men with whom our hopes rest, and a library gradually and insensibly moulds the profession of a town to a better and higher status.

In less than two years' time we hope to celebrate the one hundred and fiftieth anniversary of the landing of Governor Phillip, and I can think of no more fitting method of perpetuating the memory of our early colleagues than by establishing a really up-to-date medical reference library in Sydney.

When tomorrow you resume your everyday work, do not forget that

> The strong-souled nations, destined to be great,
> Honour their sires and reverence the Past;
> They cherish and improve their heritage.
> The weak, in blind self-trust or headlong rage,
> The olden time's transmitted treasure cast
> Behind them, and bemoan their loss too late.
>
> J. K. Ingram.

REFERENCES.

[1] A. L. Kenny: "George Adlington Syme: The Man and the Surgeon", *The Medical Journal of Australia*, February 13, 1932.

[2] N. J. Dunlop: "James Cook and the Australian Medical Harbingers", *The Medical Journal of Australia*, September 19, 1925.

[3] D. Anderson: "John White", *The Medical Journal of Australia*, February 11, 1933.

[4] J. MacPherson: "William Balmain, M.D., R.N.", *The Medical Journal of Australia*, April 28, 1928.

[5] E. Sandford Jackson: "Some Early Australian Doctors: John White", *The Medical Journal of Australia*, January 30, 1926.

[6] J. MacPherson: "Denis Considen", *The Medical Journal of Australia*, December 3, 1927.

[7] E. Scott: "The Life of Captain Matthew Flinders", 1914, Chapters vi to x.

[8] N. J. Dunlop: "William Redfern", *The Medical Journal of Australia*, March 10, 1928.

[9] J. F. Watson: "History of Sydney Hospital."

[10] E. S. Jackson: "Henry Cowper, Surgeon, and His Times", "Proceedings of the Australian Medical Congress", 1933.

[11] N. J. Dunlop: "Dr. William Bland", *Journal of Royal Australian Historical Society*, Volume xi, Part vi, 1926.

[12] William Osler: "Æquanimitas."

PRESIDENT'S ADDRESS.[1]

By R. B. WADE,
Sydney.

SOME forty-five years ago, when I began my study of medicine, life was comparatively simple. The student's course, just then advanced from four to five years, was straightforward; the graduate world consisted of general practitioners and of consulting physicians and surgeons; special lines of work had only just been introduced—at Prince Alfred Hospital, where I was a resident medical officer some five years later, these were but ophthalmic surgery and gynæcology. Hospitals were few, and opportunities to become an honorary surgeon at a hospital were rare.

A new phase then opened out. First, hospital accommodation increased greatly; this was the result of an increase both in the number of new and in the size of the older hospitals; and with this increased accommodation came the possibility of hospital surgical work for those who would otherwise have been compelled to be general practitioners.

Next, research work opened up new fields of practice; this research is still progressing rapidly, and as a consequence there are already quite a number of varieties of special work in hospital practice. I shall, however, confine my remarks here to branches of surgery, each served by its own surgeon, namely, surgery of the eye, of the ear, nose and throat, gynæcology, urology, orthopædic surgery, neurosurgery, plastic surgery, surgery dealing only with the rectum, another section dealing with the thorax, surgery dealing with cancer work. And the number of special lines of work is still increasing.

How has this affected the practice of surgery? We find that men employed and remaining in general practice are doing a large amount of surgery, both general and specialized, and that they are not, as in the past, confining themselves to general medical work outside the hospitals.

With the growth of hospital accommodation there has been a glut of hospital appointments, and these have had to be filled, whether the applicants had any special training for the surgical position or not; no post-graduate work was demanded, and in most cases the surgeon appointed acquired all his special surgical knowledge after appointment. This is the case in the smaller hospitals, the cottage, the district, and the base. In the larger teaching hospitals, the general surgeons (I am speaking of all surgeons as specialists, and for clarity would distinguish

[1] Read at the Ninth Annual General Meeting of the Royal Australasian College of Surgeons at Sydney, March, 1936.

between general surgeons, and, if they will forgive me, the minor specialists) have until late years been chosen from those who, as senior resident medical officers or medical superintendents, showed some special talent in surgical work or, in some cases, from those who had acquired a higher surgical degree. Their practical experience has also been almost entirely gained after appointment as junior surgeons.

The minor specialists have increased rapidly. Most of them have undertaken post-graduate study, have passed advanced examinations, have gained diplomas in their special line of work, and have become elected to the staffs of their several hospitals. In some cases they have derived benefit from attending clinics or from acting as house surgeons in a hospital devoted to their specialty, but only when they occupy hospital posts as junior surgeons do they really gain their practical experience. These posts as specialists have, until recently, been held only at larger hospitals.

However, the position is now becoming more stabilized, as the rate of growth of hospital accommodation lessens; and the larger teaching hospitals are tending to demand the possession of a higher degree or diploma from the applicants for all surgical appointments.

Specialist surgeons, both general and minor, who are often on the staff of large hospitals, have been appointed to many district hospitals; the same kind of appointment is mooted, and before many years will probably be made, in the country base hospitals. Points of importance are revealed from this. In smaller hospitals there is no insistence on any preliminary training, academic or practical; in the larger hospitals, where a higher qualification, though not compulsory, is taken into consideration, the practical experience need not and cannot be great, except when posts of "surgical associates" have been held. Unfortunately in Australia there does not exist any other method of giving practical training to men who have acquired a higher qualification, or to men of the senior resident or registrar type who hope that their prolonged period of resident service will give them some advantage in the practical side, to help them in their future surgical work.

By creating the position of "surgical apprentice or associate" our College has made an opportunity for general surgeons to acquire practical experience after they have acquired a higher degree and before they reach the stage of a hospital appointment. Advantage has been taken of these positions in Melbourne by several young men—30 in all; but, though the same positions are available elsewhere in Australia and New Zealand, no advantage has so far been taken of them. The benefit gained by this year of surgical apprenticeship has been most obvious when any of those men have sat for their examination for the Fellowship of the Royal Australasian College of Surgeons, for the practical surgical knowledge they displayed was outstanding.

This system has been in operation in Melbourne for some years, the Alfred Hospital having led the way in 1928 by creating positions of assistants to indoor surgeons. The scheme has been most successful.

The surgical associate or apprentice (the names differ at different institutions) acts as first assistant to the senior surgeon at all difficult operations, assists the outdoor surgeon in the out-patient department, advises the resident officer, and helps in teaching the students. He is given operative work of suitable type, and when he is thought to be qualified, does some of the immediate operations. He has become a valuable member of the surgical team. All applicants for this position must possess a senior surgical qualification, but, as many men get this qualification within three years of graduation, this requirement does not materially limit the supply. The appointment at the Royal Melbourne Hospital is for two years only, and the appointee must be approved by the surgeon to whom he is allotted. In practice, nobody applies until he has assured himself that he will be welcome to the man with whom he wishes to work.

Finally, it may be seen that in most cases experience is gained in practical work after election to a hospital appointment, and this quite obviously must always be so; but under our present system the work of the junior assistant honorary surgeon may be done, and frequently is done, without supervision. It is apparently assumed that when he is elected to the staff of a hospital the junior assistant honorary surgeon is quite competent to undertake work of any magnitude.

The minor specialists are becoming more numerous; their work is becoming more defined, and takes up a greater part of hospital routine. The general surgeon, however, finds his scope becoming more and more circumscribed as a result of the inroads and encroachments of the minor specialists; he is at the moment hard put to it to retain his position, and is fighting to prevent the other specialists from filching from him much of his more interesting work.

Another point that needs special mention at this stage is the tendency to the formation of surgical "teams", "firms" or "units", as they are variously designated, in some of the larger teaching hospitals.

What is the trend of the future? One can but try to see the course which events are taking and attempt to make some forecast. One fact, however, stands out quite definitely, that the future is in the hands of the surgeons themselves, if they wish it. It is for them to try to shape the course of events, and not to let them evolve unaided and undirected; and, here in Australia and New Zealand, the Royal Australasian College of Surgeons should have great influence in guidance and direction.

Here may I give some ideas, purely my own, of what I think should be our future trend. However much you may differ from them, at least you may take it that they are put forward with the hope of arousing some discussion and thought as to how we, as the preeminent surgical body in Australia and New Zealand, may best use our opportunities of helping surgery in these lands.

First, let me discuss the future of the general surgeon and of surgery in the branches. The minor specialists are increasing and will increase

in numbers still more; and if it is asked, "does this multiplication of specialists serve any good purpose?" the reply must be in the affirmative. The more time that an individual can give to a limited subject, and the more knowledge he gains both by investigation and through practice, the more proficient will he become in it, and the better service he will give.

Is the day of the general surgeon passing? I think the writing is on the wall for those who care to read. Though I realize that there will be many who disagree with my view, and though I believe that the issue will be long drawn out, whatever happens, the position of the general surgeon will be profoundly modified.

We must ask whether a man, wishing to do something on all or many of the specialties and also on what is left untouched by them, gives as good service in any one specialized branch as the man who confines his activity to that branch; and if we ask that question, I think the answer must definitely be in the negative. On the other hand, does the minor specialist, working in his own smaller cell, confined in his outlook, give as good a general consideration to, and take as broad a view of, a case as a general surgeon? Is he not likely at times to overlook something of importance that he is not specially investigating? Does he not tend to find something in his own realm to account for the condition and to overlook something in the general systemic condition? Here the answer is that specialists in the minor branches will be unlikely to take or to retain the broad outlook.

If, then, the general surgeon goes, and the surgical work becomes tagged and drafted into smaller compartments, will not something have to be evolved to regain the broad outline?

As a remedy there seem to me to be two possibilities. First, matters may remain much as they are; the general surgeon, however, will gradually see his scope circumscribed, while the number of minor specialists increases. In order, however, that the minor specialist shall obtain and retain his broader general view, it may be necessary for him before he finally take up his own work, to begin his hospital surgical life as a junior in the general side, while he also attends the clinic of the senior surgeon in his own chosen specialty.

The advantages of such a course may be seen in the development of the specialists of a decade ago; starting as general practitioners, they became surgeons and then entered on a special line of work—a form of training that could with difficulty be bettered.

This solution of the difficulty, though it is being tried in some places, seems to me not to be practical, and I think the remedy must be found in another direction. Can a better method be suggested than that in use at the Mayo Clinic; there the patient first sees a senior member of the clinic, who receives a broad outline of the case. The patient is then sent round, should it be necessary, to various specialists for investigation; and, finally, after consultation of all concerned, he is put under the care of operators skilled in the treatment of his particular

condition. Before operation a full knowledge of the condition of all his organs and systems is obtained, and the final decision is come to only after consultation.

Cannot such a plan be adapted to surgical work in general hospitals, where everyone would work in a "firm" or "team"? It could be done by enlarging the present system of surgical teams into a more complete unit that would embrace all classes of surgeons, pathologists and other investigating agents. It would, however, I think, need a head, or full-time chief, in the larger hospitals; and the whole details of the allocation of work would need to be in his hands. There would have to be free and open cooperation of all the staff, each member working as one of a unit, and not as an individual. In such a unit, the special work would probably become more and more defined, and the general surgeons would by degrees become merged into the specialists, or would tend themselves to specialize in more limited fields. In this way, too, there would be a system of supervision and control of the work of the more junior of the honorary staff and of their training.

To trace briefly the events arising from the excess of hospital appointments—in the past it was necessary to appoint to hospital positions men who had not necessarily had post-graduate training, and then surgery was learned within the hospitals, without oversight, and was in the main self-taught. The custom now, though this growth of hospital bed accommodation still means that many posts cannot be filled by men with special education, is for a surgeon to be chosen who has acquired a higher qualification, and with it some degree of practical experience, but the final work is still in the main self-taught and unsupervised.

When only the man with academic and practical post-graduate education is chosen for hospital appointments, I have no doubt that a system will be evolved whereby junior surgeons, house-surgeons and registrars will everywhere receive a definite and not a desultory training, according to their needs.

Has not a hospital some responsibility as a training school, and should it not be part of its work to give its staff of resident medical officers a definite training? To do so is impossible without concerted team work. The house surgeon should be taught just that amount of simple practical surgery which needs no special post-graduate training, but which his Bachelor of Surgery degree entitles him to know, and which is common to everyday general practice.

At the Royal Melbourne Hospital the work of the surgical associate does not interfere with that done by the house surgeon, who receives an adequate training in the surgical technique of conditions such as acute appendicitis or inguinal hernia. During the first month of each house surgeon's appointment, he is not allowed to operate, and operations of the type specified above are done by the associate. For the remaining months of each house surgeon's appointment, he is allowed to do operations of this nature under supervision. He is told that, if he wishes

to be a surgeon, he must get a senior degree and become an associate, and that he is merely being taught enough to fit him to cope with surgical emergencies. During 1935 the house surgeons at the Royal Melbourne Hospital performed over 360 operations of this type, the minimum number done by any one of the eighteen house surgeons being 15.

The senior resident medical officers and registrars of a standing of one year or longer who remain on the resident staff in the hope of gaining surgical experience with a view to becoming surgeons later, should be given the opportunity of learning their surgical technique and investigation under the supervision of their seniors.

The junior honorary surgeon should, as part of a team, have access to all the cases so as to enlarge his knowledge, he should take part in consultations and discussions, and should have allotted to him a meed of the surgical work on a progressive scale, until he perfects his technique, or as he shows himself competent to undertake it.

What, then, of the general practitioner? As the possibilities of post-graduate education increase, and the hospital positions become relatively less numerous, there will be a demand for post-graduate work before appointment to specialist positions, and so the tendency must be for the man with the Bachelor of Surgery degree only to drop gradually out of hospital surgical appointments. But does that mean he must drop back to the days of forty years ago, when he did no surgery? During his career as a house surgeon he should be given the opportunity to acquire the practical technique of that surgery (difficult perhaps, but not impossible to define), which does not require further post-graduate special training.

In this, I am in no way concerned with what surgery the general practitioner wishes to do in accordance with the experience he gains as he advances in life, but am rather more anxious for some concrete scheme to be laid down as to what a house surgeon can justly demand to be taught in a practical way.

Facilities, then, must be created for post-graduate work; the academic is quite well provided for, and it is the practical work for which a scheme must be provided, both before a hospital post is obtained and also by a system of supervision after junior honorary surgeons of a hospital have been appointed.

We, as a College, have already done much by insisting on a high qualification for admission to our Fellowship. This insures at least a high degree of post-graduate study. In addition, in those places where the positions of "surgical apprentices" have been made use of, much valuable practical training has been added to the holder's surgical knowledge. They are open in Australia and New Zealand; and the success of these appointments has been so marked in Melbourne, the only city where young surgeons have availed themselves of the opportunity, that every effort should be made elsewhere to initiate such a

method of practical training. Once this system is in operation, it will, by the very advantages it gives, soon become permanently established.

Although the College has arranged to carry out post-graduate surgical teaching at Prince Henry's Hospital, Melbourne, we have still much to do in influencing opinion in the first place as to the necessity of providing a full service of practical teaching, not only for all those who have higher degrees and who have not yet gained a hospital appointment, but also for those who have recently acquired one, and in the second place that a higher surgical degree or diploma should be a *sine qua non* for all surgical appointments at any hospital. An analysis of admissions to Fellowship of the Royal Australasian College of Surgeons, made by the Censor-in-Chief, shows that since the period when it became necessary for an applicant to have a higher qualification, the total admissions have decreased by one-half, but the admissions in Victoria have increased by one-third. This is due to the fact that in Victoria it is necessary for all candidates for positions at large hospitals to possess a senior surgical qualification, and so more men present themselves for examinations of this type. It also shows that the system of surgical hospital apprenticeship has been accepted there.

May I approach the question of surgical work in hospitals from another angle, namely, from the point of view of the hospital boards of management, and how they must view the position? First, the visiting surgeon to a hospital is an honorary officer, and so is not under the same control by the hospital executive as are the other servants of the institution. Next, it is the surgeons who are the technical experts, and all suggestions of change and improvement should come from them; they must take the responsibility for the quality of the surgical work in the hospital, for it is on the keenness and interest of the staff that the reputation of the hospital will depend.

Under the voluntary system such an efficient service, on the whole, is given by the surgeons to a hospital, that any criticism can be only from the point of view of suggesting improvements on what is, on the whole, most satisfactory. All hospital executives realize that there are many points in which improvement in administration can be made, but they are hindered from introducing them by conditions in which finance, existing building arrangements, insufficient or unsuitable accommodation all play a part. As time goes on, plans for better organization must come, some from the executive, some from the surgical staff; and one might ask if the way were clear, financially or otherwise, whether improvement could be made on any of the following points.

1. Would it not be of advantage to the hospital if it were made compulsory for all applicants for a surgical position to hold a higher degree or diploma?

2. Is it not the custom to consider a surgeon, when elected to the staff of a hospital as a junior, as competent to treat all kinds of surgical ailments, small or great, simple or complicated? Does he not,

in some cases, shut himself in a small compartment wherein he does his work without supervision from his senior?

3. Is it not the present-day tendency for a surgeon to consider that his duty is merely to give treatment to the patient under his charge? Should not his duties be to train those junior to him, whether they be assistant honorary surgeons, registrars, or house surgeons? In other words, is the diagnosis of the patient's condition and the performance of a large list of operations on a given operating day the be-all and end-all of a surgeon's job?

4. Is the system of team work a better one than that in which each individual is entirely self-contained?

5. Is the present system of consultation ideal? Should the consultant merely state his opinion on a special sheet, or should not consultations be verbal so that any points of difference might be discussed and thrashed out? Should not the same apply to reports from special investigating departments, such as the pathology and X ray departments?

6. When a senior surgeon retires, is it right that his years of valuable experience should be lost to the hospital, and that no call should be made upon his services? As a consultant, could he not be made a part of a team and his experience utilized?

7. Should the out-patient department be divorced from the in-patient work, or should not the unit be a complete whole, beginning with the out-patient department and ending in it again in a follow-up out-patient clinic?

8. Is the present out-patient system satisfactory? That is, is it right that a highly trained surgeon should spend several hours seeing a large number of out-patients, many with trivial ailments? Could not some system be devised to do away with this trivial and unnecessary work, so that the surgeon might have some time for teaching, for investigation when necessary, and for a more detailed survey of the case?

9. Is it best, on the whole, that surgeons should be continually changing house surgeon assistants and anæsthetists, or should they not, at least in the serious and difficult cases, utilize more regular and experienced assistance?

10. Does the present system of history-taking fulfil one of its purposes, that is, give material for the compilation of clinical knowledge? Should the responsibility of history-taking rest with an ever-changing body of house surgeons? Cannot some better scheme be evolved?

11. Though with this present system of many hospitals and many hospital appointments it seems at the moment impossible to avoid multiple appointments, is it for the good of the hospital that one surgeon should hold posts at several hospitals?

12. Should emergency operations be performed by the more junior surgeons? Are they not the cases in which mature surgical judgement is required?

13. Would not better scientific work be forthcoming if, as a result of team formation, any paper or scientific contribution put forward by a member was first subjected to the criticism of his immediate colleagues, that is, as far as publication of hospital work is concerned?

14. Is the follow-up system a necessary adjunct to a surgical unit, if knowledge of results is desired? Should it be made compulsory?

These problems of hospital administration are not new, and their solution is being sought in one way or another both here and in other parts of the world, where alterations in method are being tried. They might well be subjects in which our own College, as the body representing surgery in this part of the world, should take an interest and give a lead.

In conclusion, I must thank you for your patience. I should like to think, if I have done no more, that I have at least given you something to consider and to discuss, for there is nothing like controversy and argument to bring about a change for the better.

TUBERCULOSIS OF THE JOINTS, WITH SPECIAL REFERENCE TO THE KNEE.[1]

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WHEN I received the invitation to deliver an orthopædic lecture at the meeting of the Royal Australasian College of Surgeons in Melbourne, my first sensation was one of pleasure at being so honoured, but after the first glow this was tempered by the question as to what I should talk about. I have always been impressed by the fact that we face a lack of definite information on the more common conditions that we encounter in our daily work. What becomes of our patients who have the more common chronic ailments? Do they get well of these chronic, long drawn out ailments, or do they finally succumb to spread of the disease? Are they sufficiently relieved by our treatment to take up normal living? Such questions we are too often unable to answer. Therefore, I concluded that I would talk briefly about tuberculosis of the joints, presenting a *résumé* of a study recently made in the Mayo Clinic as to the end results in a series of cases in which resection was performed for tuberculosis of the knee. The knee is the largest of all joints, but is scantily clad. It is covered for the most part only by skin, subcutaneous tissue, fascia and ligaments. Of all the joints it is the most accessible to surgical attack and presents on exposure the entire joint surface for inspection. Tuberculous infection of the joints in our experience occurs in the spinal column, knee, hip, elbow, ankle, shoulder and wrist, in the order named.

Tuberculosis of the joints is not so common as it was formerly; certainly in the United States of America it is definitely on the decline.

The reasons for this are multiple, but we should not minimize the control that has been exercised over the dairy herds. Many years ago, Fraser, of Edinburgh, showed that nearly 20% of the milk supply of that city was infected with *Mycobacterium tuberculosis* (*bovis*). He showed, further, that more than half of the surgical tuberculosis found among children at the Royal Hospital for Children was attributable to the *Mycobacterium tuberculosis* (*bovis*). The necessity for control of the milk supply is obvious.

The efforts along educational lines, teaching people how to live properly, and the confinement in sanatoria of patients who have advanced pulmonary tuberculosis, have been most useful in reducing the incidence

[1] Read at the Children's Hospital, Melbourne, in connexion with the annual meeting of the Royal Australasian College of Surgeons, March 5, 1935.

of tuberculosis of the lungs. There has been a corresponding decrease in the incidence of tuberculosis of the joints.

Tuberculosis of joints is always secondary to a tuberculous lesion elsewhere in the body, usually in the mesenteric or bronchial lymph nodes; therefore, if a patient has monarticular arthritis, the presence of a tuberculous lesion elsewhere should put the physician or surgeon on his guard. The disease is by no means confined to children, although these little sufferers, gathered as they are in hospitals for children, impress us most. The study that I am presenting today is mostly of adults. While we are more prone to operate on children who have tuberculous joints than we were some years ago, we still treat the majority of them conservatively, whereas our results prompt us to continue radical operative treatment of like conditions in the adult.

The early symptoms of tuberculous involvement of a joint are pain, which may be described by the patient merely as stiffness, limitation of motion, local warmth, swelling with periarticular thickening, and limp, if the involvement is of the lower extremity. As the disease progresses and the cartilage becomes eroded and the bone becomes exposed, the pain and stiffness are accentuated, and the typical "night jerks" or "night cries" of the children are met with. This is particularly true if involvement is of the knee or hip. The child, just as he is dropping off to sleep, cries out as his muscles relax, allowing the roughened surfaces of the bone ends to move on each other. He awakes, and as his muscles contract the joint surfaces are held firmly together again and the pain is relieved. The child is bewildered on fully awakening, and is unable to tell why he cried out. As destruction of the joint surfaces continues abscesses may form. If the infection is unmixed with pyogenic organisms, there is little, if any, fever, but on contamination with such organisms, introduced either through the blood stream or by surgical drainage, considerable fever may ensue. If such abscesses rupture spontaneously, secondary infection is mild and fever may be entirely absent.

The outstanding feature of a tuberculous joint infection is its chronicity, with persistence of symptoms. Although the patient may state that he has periods when he is free of symptoms, close questioning will bring out that there is always a residuum of discomfort and disability, even in the so-called free periods. This, in the absence of involvement of other joints, should make one suspect tuberculosis.

If the disease is primary in the synovia and remains there, the symptoms are chiefly swelling, and possibly stiffness. In the Mayo Clinic I have observed two patients with only swelling and effusion of the knee, both adults, and we proved the presence of tuberculosis by aspiration and inoculation of guinea-pigs. The patients went on to spontaneous recovery. If the disease is primary in the bone, as it is most frequently, symptoms will depend on the situation of the abscesses and their size. Abscesses may exist for years with but little discomfort to the patient. If they break through abruptly into the joint, pan-

arthritis may result, with very acute symptoms. As a rule, however, they break through gradually, and protection by adhesions which act as barriers, is built up where the abscesses enter the joint cavity. Deformity varies with the structure of the joints, depending on the bony components and on the pull of the various muscles which have to do with motion of the particular joint involved. In the spinal column flexion is usual because the disease affects the weight-bearing, anterior portion of the vertebræ and collapse of these causes flexion; the hip, in the late advanced stage, assumes flexion and adduction, with a tendency for the head of the femur to push upward and backward on the iliac bone, forming the so-called travelling acetabulum; the knee, in the final stage of the disease, is in partial flexion; the tibia is subluxated on the femur, because of the pull of the hamstrings, and is rotated externally consequent to the action of the biceps on the fibula.

Röntgenograms reveal pathological changes in bone, and thickened synovia casts soft-tissue shadows, but there is nothing that can be set down as truly pathognomonic of tuberculosis of joints. Osteoporosis, particularly in the early acute stage, is common. Rarefied areas, indicating the presence of abscesses, may be noted. The joint line may be narrowed. The picture in the more advanced cases is essentially that of destructive arthritis. In the knee the size of the intercondylar notch is often accentuated and enlarged; also, it is not uncommon to see rarefied, little notched areas on the tibial or femoral margins, where the synovia is inserted; in the elbow the olecranon process may wedge deeply between the humeral condyles. Almost always destruction of the joint surface is found to be more extensive on opening the joint than would be judged from the Röntgenogram.

The diagnosis is by no means always easy, and it is sometimes necessary to resort to biopsy. In such doubtful cases it is well to obtain the consent of the patient, or, if the patient is a child, of the guardian, before proceeding with arthrodesis, if this is indicated. The pathologist is able to make a definite diagnosis in the majority of instances. In the still doubtful cases, inoculation of guinea-pigs also should be employed. Its chief disadvantage is the delay.

No discussion of tuberculosis of joints would approach completeness unless the relation of trauma to the occurrence of the disease were at least mentioned. This is an extremely difficult question to settle, and is important if the patients are adults engaged in industrial pursuits. If the patient's statement is accepted, the incidence of trauma being at least a factor would be 50% and higher. However, when one carefully reviews the histories and talks with patients, the number of cases in which trauma will appear as an ætiological factor will be lowered considerably. As nearly as we could ascertain, in our series of cases of tuberculosis of the knee joint, in 13% there was a definite connexion between trauma and the condition of the joint.

TUBERCULOSIS OF THE SPINAL COLUMN.

Tuberculosis of the spine is a subject entitled to separate consideration, but I feel that a few words are necessary if for no other reason than that in the United States two of my colleagues in orthopædic surgery, namely, Fred Albee and the late Russell Hibbs, advanced their respective operations practically simultaneously in 1911. Hibbs's operation is of the plastic type, aiming to produce fusion of the laminæ and articulating processes posteriorly. Albee introduced use of the bone graft for the same purpose. There can be no argument against the value of arthrodesis, but the unfortunate phase of these operations is that no attempt can be made to eradicate the tuberculous disease from the bodies of the vertebræ. Thus far no sound procedure to accomplish that has been advanced. Fusion of the bodies of the vertebræ is the real sign of arrest of the disease. Until we can see such signs in the Röntgenogram we have no right to pronounce the patient cured. Subjective symptoms are relative after all, and are not reliable. In the Mayo Clinic we have operated on some 400 patients, very few of whom have been children. Our opinion is that the operation is very much worth while for the adult, and definitely tends to prevent deformity and to hasten ankylosis of the vertebral bodies. Arrest of the disease in 50% of our cases was the best we could offer at our last review. Eradication of the involved bone is not possible, as it is in tuberculosis of the knee or hip, by surgical intervention.

TUBERCULOSIS OF THE HIP.

The early symptoms of tuberculosis of the hip may be mild, and stiffness and pain may appear only on full movement. In advanced cases the deformity is that of flexion and adduction, and there is a tendency for the head of the femur to travel up on to the acetabulum. When the disease is primary in the acetabulum this typical deformity does not occur; the head sinks deeper and deeper, until it perforates the acetabulum and enters the pelvis. In two instances we have encountered perforations of the abscess into the bladder, and sequestration of a portion of the head of the femur into that viscus. Removal of the bone by suprapubic cystostomy was necessary. Acetabular disease may be especially intractable.

We prefer, usually, to effect arthrodesis by combined intraarticular and extraarticular fusion. In a report, made in 1933, I[1] presented the method as used in forty-six cases, with 90% of successful fusions. We believe that there has been an exaggerated fear of opening the hip widely and of removing the tuberculous material. Fusion following resection of the hip develops more quickly when as much as possible of the tuberculous *débris* and bad bone are removed.

TUBERCULOSIS OF THE KNEE JOINT.

In 1927, before the American Orthopædic Association, Fortin and I[2] reported from the Mayo Clinic on 211 cases of tuberculosis of the

knee in which arthrodesis was performed; and in 1934 I[3] reported sixty-three additional cases, making 274 in all. Every case was one of undoubted tuberculosis; the diagnosis was proved either by microscopic examination of the tissue or by inoculation of guinea-pigs, or both. Two-thirds of the patients were males, and trauma seemed to be a factor in 13%, as has been mentioned earlier in this paper. In 44% of the cases tuberculosis was demonstrable elsewhere in the body; the most common site was the lungs. A family history of tuberculosis was demonstrable in 8% of cases.

Before embarking on a further consideration of this subject, I should say again that I am speaking chiefly of tuberculosis of the knee of the adult. I am aware that there is a tendency to advance the line of operative attack to include the joints of children, and although, because of frequent disappointment in the conservative treatment of children, I am fundamentally in sympathy with this trend, there are many factors to be considered. The child's time is not so valuable as that of the adult, he has no responsibilities, and may overcome the disease while living happily, in healthful surroundings, under proper orthopædic supervision. Institutions of the proper type are available for the child, but not for the adult. I am certain that the end results among adults who have tuberculosis of the knee, following even carefully controlled and protracted, conservative or non-operative treatment, have been poor. After many years of conservative treatment, a tuberculous knee joint may become ankylosed, and this is looked on as a triumph for conservative measures. When the same can be accomplished in as many months by arthrodesis, why waste all the time? Our experience with this disease in children is comparatively so meagre that I feel unjustified in taking a definite stand as to choice of operative and non-operative measures. At the Mayo Clinic, of recent years, we have performed arthrodesis of the knees of children more often than heretofore, with happy results; there has been no appreciable shortening. These children do need, however, because bony fusion is slow in developing, efficient and prolonged post-operative splinting to prevent flexion deformity.

Symptoms. The outstanding subjective symptoms of tuberculosis of the knee joint are stiffness and pain, whereas the objective symptoms are increased local warmth, deformity and limping. The condition is characterized by chronicity, with remissions, but not complete freedom; when the joint is eroded the pain may be excruciating and may be elicited on the slightest jarring and jolting. Thickening of the capsule, sometimes referred to as periarticular thickening, is common. Excessive effusion is rare. Atrophy of the thigh is common and shortening is fairly common. Increased length of the leg, attributable to increased vascularity, with consequent stimulation of growth centres, was noted in 3·5% of our cases. The typical deformity is one of flexion, accompanied sometimes in advanced cases by subluxation of the tibial head and outward rotation of the tibia.

Pathology. It is not possible to state, in any given case, whether the disease is primary in the synovia or in the bone. In approximately 9% of our cases the bone did not appear to be involved, and, therefore, we concluded that the synovia was the primary site. We found abscesses in the bone at the time of operation in approximately 50% of the cases. Sequestra were present in 11·1%.

Differential Diagnosis. Chronic infective arthritis is more common than is tuberculosis of joints, and often in the former condition many joints are involved. Erosion of bone, as evidenced in the Röntgenogram, is rarely as extensive in chronic infective arthritis as in tuberculosis. In gonorrhœa a history of primary infection usually can be elicited; the initial symptoms are acute, and at first other joints are involved, the disease finally settling usually in one joint. Syphilis in our experience rarely affects the knee joint, but it may produce a confusing picture. Tests of the blood are almost certain to give positive reactions if the lesion is attributable to syphilis. In hæmophilia a positive family history may be obtained, and suspicious changes in the blood, such as increased coagulation time, should be considered. Aspiration of joint fluid and injection of guinea-pigs may be necessary.

Treatment. Arthrodesis by resection is the operation of choice, but it should not be performed when draining sinuses are present, when patients are very young or are old, or when patients are debilitated by disease and their expectancy of life is short. We have rarely done the operation on patients who were less than nine years of age. If any of the vital organs are affected by tuberculosis, they should receive attention first; for example, if a single kidney is involved, the kidney should be removed first and the knee treated later. Even if the tuberculous involvement is general, if patients have a fair expectancy of life, if there is a great deal of pain in the knee, and if the patient is a young adult, resection, I believe, is preferable to amputation. A few of our patients, whom we knew had disseminated tuberculosis and were doomed to die of it, lived from a year to five years in comfort with a stiff knee. The determination of whether arthrodesis is to be done must be made by careful study of the condition of the knee, of the patient's general condition and of his social status, temperament, and so forth. Tuberculosis of low grade, involving a knee joint, may exist for many years, and the patient may be able so to govern his activities that it gives him little concern; if so, there is no reason for insisting on arthrodesis. Nevertheless, the joint remains a potential danger.

It should be borne in mind that arthrodesis of a tuberculous joint is performed to obliterate motion and, whenever possible, as much of the tuberculous material as can be reached should be removed at the same time. It has been our experience that, as removal of the tuberculous material is the more nearly complete, so will fusion be quicker and the likelihood of subsequent development of abscess be less. The complete and radical type of excision, which we have finally adopted in our work, has been followed by shortened convalescence with rapid union.

Technique of Operation. On the day before the operation the hair is shaved from the leg, both above and below the knee, and a dry dressing is applied. Actual preparation of the region of the operation is made when the patient is on the operating table. Then, from groin to ankle, the leg is cleansed with benzine and ether, and next several coats of iodine or merthiolate are applied. Stockinet, long enough to reach from ankle to groin, is slipped over the foot and is left rolled at the ankle. The foot and leg are wrapped in a towel as far as the upper third of the leg, and the wrapping is held in place either by a bandage or by rubber bands. The leg is elevated to deplete it of blood and a tourniquet is applied, over a folded towel, at the middle third of the thigh.

A transverse cutaneous incision is made across the front of the knee joint, just below the patella, and is extended about two-thirds the way around the leg. The skin is lifted up far enough to expose the patella and is retracted down far enough to expose the upper end of the tibia. The joint is opened by a transverse incision across the joint line, severing the patellar ligament. The incision is carried far enough back on either side to permit acute flexion of the knee on the thigh. The patella is dissected upward, removed, and kept sterile in case it should be wanted for use as a graft.

The suprapatellar pouch and the synovia at the margins are thoroughly removed. An incision is made through the soft tissues that embrace the upper end of the tibia, so that the saw can be introduced; enough of the upper end of the bone is removed to expose fully the cancellous structure. If abscesses are found in the bone they are thoroughly curetted, the membrane lining them is removed, and the cavity is swabbed with iodine. Care is taken to saw off squarely the upper end of the tibia. The saw is then introduced into the femoral condyles; no great care is taken to have the angle accurate, because later enough bone may be removed to insure the proper angle.

The knee is still held fully flexed, and the upper end of the tibia is pulled forward, thus exposing the posterior capsule, which is dissected away. We believe that it is essential to remove as much as possible of the affected tissue. More bone is then removed from the femoral condyles, the amount depending on the angle of election for the arthrodesis, usually 10° of flexion. This piece of bone is excellent for a graft, as it is pliable, cancellous and rich in bone-forming properties. It is carefully kept warm in hot saline solution packs. Two small vertical incisions are made in the leg, one on each side of the medial line, about twelve centimetres below the upper end of the tibia; these incisions are carried down to the bone. Two wire nails are driven in a slanting direction through these incisions upward into the tibia, until their points can just be seen beneath the surface of the bone. A chisel is driven vertically down along the anterior margin of the upper end of the tibia, and the tissues, with a good sized leaf of bone, are forced outward, a trough about two centimetres deep being made. If enough of the prominence of the

condylar portion of the femur remains anteriorly, the same procedure can be carried out on the femur, but often this prominence is lacking.

All is now ready for coaptation of the ends of bone at the desired angle. The ends are brought together and held firmly while the wire nails are driven through into the femur. The proximal ends of the nails are left protruding through the skin. The graft is then removed from the saline solution pack in which it has been wrapped, and is pushed down in the trough prepared for it in the tibia; thus it has bony contact with the femur and the tibia. It can be moulded somewhat, for it will bend considerably without fracturing. If a flap has been secured on the femur, the graft is tucked within the resulting crevice (see Figure I).

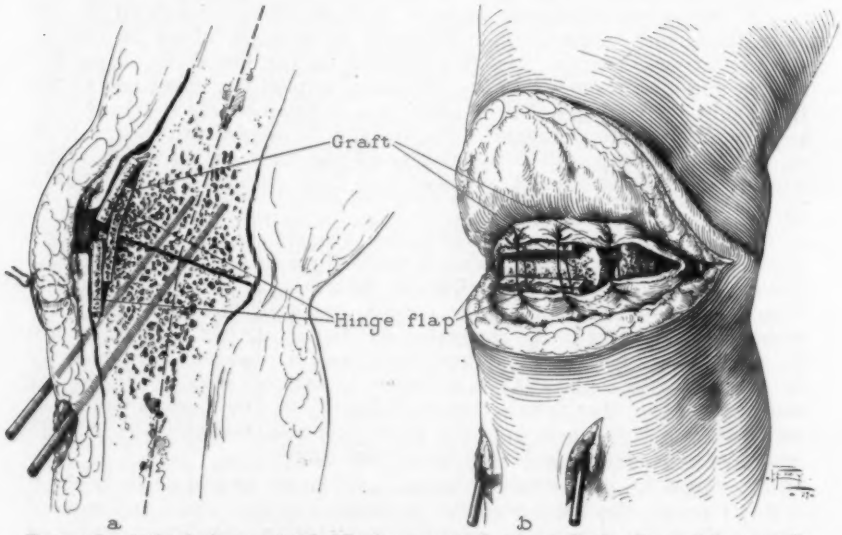

FIGURE I. Arthrodesis completed. Surfaces coapted, wire nails *in situ*, and bone graft in position.

If there is no such crevice, the graft is moulded to the femur and held in place by catgut sutures extending from the soft tissues of the femur to the soft tissues of the tibia. The remnants of the capsule are brought together as completely as possible and the skin is closed. The leg is held vertically and care is taken to maintain the desired angle of flexion, usually about 10° or 15°, and a thick dressing is applied firmly. The tourniquet is then removed.

The stockinet, which was previously applied to the foot and rolled at the ankle, is rolled up the leg to the groin, and eiderdown bandages are bound about the leg for padding. A plaster of Paris cast is then applied, extending from the toes to the groin. In our experience it has

not been necessary to include the pelvis. Canvas strips for suspension are incorporated in the cast at the foot and knee.

The patient is put to bed, and the leg is suspended to an overhead frame so that it is free of the bed and the suspenders tend to force the lower fragment against the upper (see Figure II).

Suspension is maintained for three weeks, at the end of which time the upper half of the split cast is removed, the leg is carefully lifted out, the stitches are removed, the bottom half of the cast is cleansed, and a new dressing is placed within it. The leg is replaced at the same angle as before and then, but not until then, the wire nails are removed. The nails come out easily at this time and withdrawal causes little or

FIGURE II. Leg suspended to overhead frame. Cast extends from toes to groin.

no pain. A clean dressing is applied to the knee, and a few wraps of plaster bandage are put around the old cast. About ten days after this the patient is allowed to be up in a wheel-chair, and perhaps to stand with crutches. Six weeks after the operation a new cast, extending from toes to groin, lighter than the old one, and which has shoulder straps to relieve the weight of the cast on the leg, is applied, and the patient is allowed to go home with crutches. However, he is instructed to return in three or four months for examination and change of cast, or for fitting of a brace. A brace should be worn until there is no doubt about bony ankylosis being present. This takes usually anywhere from six to nine months.

Operative Mortality. No deaths that could be attributed to the operation occurred in our series of cases.

End Results. Of 274 patients subjected to arthrodesis of the knee joint for tuberculosis, 248 have been definitely traced. Bony fusion was obtained in 220 cases, or 88·7%. Twenty-eight cases must be classed as failures; in twelve of these there was failure to unite, although the sinuses healed, whereas the others are classed as failures because of persistent sinuses, pain, and so forth. Twenty-five patients, or 9%, are known to be dead, all from dissemination of the tuberculosis.

CONCLUSIONS.

Tuberculosis of the joints is chronic, persistent, and always residual pathological change is present in the remissions. The treatment is to be directed toward general improvement of health, for disease of a joint is always secondary. It is generally conceded that ankylosis of the joint is desirable. This can be much more quickly and surely accomplished by arthrodesis than by other methods. Ankylosis is distinctly hastened when as much as possible of the tuberculous material, both bone and synovia, is removed at the operation. The incidence of post-operative sinuses is, in our experience, no greater following this radical excision than when a more conservative type of operation is performed.

REFERENCES.

(1) M. S. Henderson: "Treatment of Tuberculosis of the Hip", *Société Internationale de Chirurgie Orthopédique*, 1933, page 23.

(2) M. S. Henderson and H. J. Fortin: "Tuberculosis of the Knee Joint in the Adult", *Journal of Bone and Joint Surgery*, Volume xxv, October, 1927, page 700.

(3) M. S. Henderson: "Surgical Conditions of the Knee Joint", *American Journal of Surgery*, Volume xxvi, December, 1934, page 499.

ULCERATIVE COLITIS IN NEW ZEALAND, WITH SPECIAL REFERENCE TO THE ACUTE TYPE.

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ULCERATIVE COLITIS, so-called idiopathic, of uncertain origin, is a disease baffling to the bacteriologist, harrowing to the patient, and full of responsibility to the clinician. The discrepant opinions held in different quarters are a sure indication that we have not yet discovered a satisfactory form of treatment, even if we allow for the possibility of geographical variations in the severity of the disease. The relative places of medicine and surgery in treatment are not clearly defined; even when the patient is deemed "surgical" we may be uncertain as to the best treatment. *The British Medical Journal*, in an editorial[1] on chronic ulcerative colitis, remarks:

> The open-minded listener at the debate on this subject at the Royal Society of Medicine[2] on March 11th probably came away with the generalization fixed in his mind that some cases of chronic ulcerative colitis are incurable and others curable. It would be interesting to know whether in the future this open-minded listener will incline to treat his cases of chronic ulcerative colitis by appendicostomy, anti-dysenteric serum, lavage, ionization, serum, vaccine, psychology or starvation.

This summarization as applied to the chronic forms is sufficiently arresting, but in these the problem of treatment is seldom one of urgency and various remedies may be applied. My chief concern, however, is with the acute, rapidly progressive, and often fatal type which occurs most commonly in young people, and which presents great difficulties in treatment. My attention has recently been forcibly drawn to this variety by seeing two patients die from colitis and by being driven to perform ileostomy in a young man who was rapidly going from bad to worse under other treatment.

In compiling this paper I have drawn my material chiefly from the records of the Dunedin Hospital over the last fourteen years. In all, 40 cases have been analysed, and the inquiry has been restricted in the following ways. A considerable number of patients who had relatively slight symptoms, whose histories had no records of the passage of blood, or who gave no positive findings on X ray and sigmoidoscopic examination, have been rejected as not truly falling into the category of ulcerative colitis. A number of military pensioners who acquired "dysentery" on Gallipoli or in Egypt, and who have been treated over the period, have likewise been excluded as perhaps likely to have been infected originally with one or other of the classical agents. Reference, however, has been

made to these when they illustrate points in diagnosis and treatment. True bacillary or amœbic dysentery is unknown in New Zealand, and I have therefore rejected all patients whose illness did not begin in the Dominion. With one or two exceptions the patients had never been out of this country, and in the exceptions no history of colitis during residence abroad could be elicited. This study consequently may be taken, subject to the limitations of paucity of material, to give a reasonably accurate picture of the disease as it occurs in this part of the world.

The object of the article is to draw attention to a relatively common disease which to me is a matter of perplexity and distress. It is not a serious contribution to the subject of ulcerative colitis, but rather a personal confession of defective knowledge and inadequate therapeutic resources.

The records have been carefully analysed and the salient points summarized under the following headings: sex, age, bacteriology, pathology, predisposing factors, clinical types, symptomatology, diagnosis, treatment, mortality.

SEX.

There were 26 females and 14 males. The disproportion is probably erroneous, as military pensioners are excluded.

AGE.

The youngest patient was ten and the oldest seventy-two years of age. In this series the most impressive point is the frequency of the disease in young people, more than a third of the cases occurring in persons between the ages of twenty and thirty; the first three decades account for slightly more than half of the forty cases under review.

TABLE OF AGE INCIDENCE.

Age Group.	Number of Cases.
Under 20 years	6
21 to 30 years	15
31 to 40 years	5
41 to 50 years	7
51 to 60 years	5
61 to 70 years	1
Over 70 years	1

BACTERIOLOGY.

Examination of the fæces gave disappointingly negative results. Specific tests of fæcal organisms towards the dysentery and typhoid group were carried out in the majority of cases, and in only one (a fatal case) was a positive agglutination towards the *Bacillus dysenteriæ Y* found. In all other cases the results were negative, and no parasites were found in the fæces. In most cases cultures yielded *Bacillus coli,*

and about a third yielded in addition streptococci or staphylococci, or both. Little light, therefore, was thrown on the problem except in a negative way. It is of interest to note that in the pensioners who acquired "dysentery" abroad the bacteriological findings were just as disappointing.

PATHOLOGY.

In the lesser cases as seen with the sigmoidoscope the changes comprise a diffusely red, angry and granular mucous membrane with marked tendency to bleed, and ulcers of greatly varying size, but usually shallow. In several patients whom I have examined actual ulceration has been difficult to demonstrate.

The severe cases as seen *post mortem* make, as Hern[3] remarks, "an impressive sight". His description is so adequate that I shall largely quote it.

> Starting abruptly at the ileo-caecal valve, the whole large intestine is laid utterly waste. None of the original appearance of the surface is recognizably preserved. The inner coats of the mucosa and submucosa are replaced by naked granulation tissue, thick or thin, standing on the denuded muscular coat, with irregular islands and variably undermined patterns, tags and bridges along the axis of the bowel. The islands and patterns projecting on the surface represent the least affected remnants of the swollen submucosa surmounted by residual or regenerated epithelium.

He notes that the ulceration has a strong longitudinal bent in practically every case, but this is not invariable.

Though the ulceration is usually confined to the colon, it may extend into the terminal part of the ileum in patchy form; this occurred in one case of the present series. Not all conform to this description, and even in fatal cases the ulceration may still be patchy, with preservation of the greater part of the mucosa.

The overwhelming impression derived from a study of *post mortem* specimens is that when healing takes place, it must be attended frequently by a severe degree of contraction of the gut (see Figure IIIB). As Hern puts it:

> It is evident that the only effect upon the colon as a whole which can result from an intact muscular coat with diffuse fibrosis of the submucosa is general contraction.

One other impression gained from *post mortem* examinations is the marked degree of friability which points the danger of any general exploration and of handling at operation.

The Extent of Colon Affected.—The opaque enema yields satisfactory evidence of the extent of bowel involved as illustrated in the accompanying X ray films (Figures I, IIA, IIB, IIIA and IIIB). In one patient, only the pelvic colon and rectum were affected, and yet this woman was reduced to such extreme misery that left ileac colostomy was indicated and gave great relief. In the vast majority the disease is more extensive, reaching the splenic flexure, the transverse colon and finally the caecum. In my experience most patients, when first observed, show well established disease in the left half of the colon.

PREDISPOSING FACTORS.

One case in the series followed influenza; two patients incurred the suspicion of tuberculosis, which was not confirmed; one had

FIGURE I. Ulcerative colitis in a boy of eleven years, showing typical loss of haustration, shortening, contraction and spasm. Chronic disease extending over several years, with acute exacerbations. Medical treatment was persisted with, giving temporary alleviation.

pernicious anæmia and had also suffered from exophthalmic goitre seven years before, having diarrhœa at that time; one had what was thought to be splenic anæmia; one had had typhoid fever seven years before; one had a positive Wassermann reaction; and three gave a history of

antecedent severe constipation, the colitis following the taking of purgatives. With the exception of the factor in these last cases, two of them being severe and ending fatally, the other factors can be regarded only as acting possibly in the direction of lowering vitality.

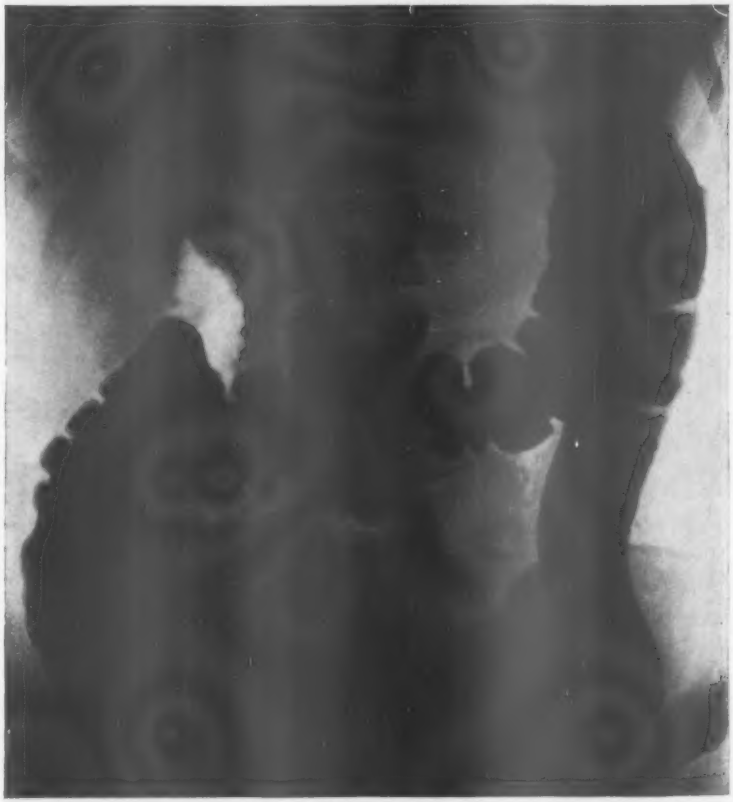

FIGURE IIA. Early ulcerative colitis affecting the left half of the colon in a boy of nineteen years.

A routine gastric analysis was not carried out and, indeed, is impossible in the worst cases. It is worth recording that in the past two years achlorhydria was observed in a noticeably high proportion of patients.

The factor of focal sepsis on the whole appeared to be negligible.

One remarkable case calls for more detailed comment.

In this instance the patient was a young woman of feeble physique who had suffered for two to three years from rheumatoid arthritis affecting first one hip and then the other. A colleague, after careful study to locate possible foci of infection, decided that colonic stasis was a likely factor and performed

FIGURE IIB. The same patient as shown in Figure IIA nearly two years later, showing marked progression of the disease. Ileostomy was performed with great benefit.

ileostomy. This gave temporary benefit to the arthritis, but after six months the patient developed acute ulcerative colitis: this in an excluded colon. Her condition deteriorated so rapidly that colectomy was performed with a fatal issue. (This is referred to in a later section.)

It seems paradoxical to find ulcerative colitis appearing *de novo* in a colon presumably healthy (apart from stasis) after exclusion by ileostomy: this does not appear to provide a powerful recommendation

FIGURE IIIA. Ulcerative colitis affecting practically the whole colon in a girl of twenty years. Ileostomy was performed with benefit.

for the treatment of that disease by ileostomy. Rather does it lend colour to the view that ulcerative colitis is a disease of systemic origin, the infection in this case first attacking joints and subsequently the idle colon. Streptococci were recovered from the ulcers in this patient.

CLINICAL TYPES.

The series is divided into the following types of roughly even proportion: (i) acute, rapidly progressive and usually fatal; (ii) chronic, with more or less persistent symptoms; (iii) recurrent, with absence of symptoms between attacks.

FIGURE IIIB. The same patient as shown in Figure IIIA a year later, showing extreme changes in the colon and pseudopolyposis. Colectomy was performed with good recovery, but subsequent operation for small gut obstruction was required.

It is difficult to separate with precision the chronic and recurrent varieties, and it would appear that some apparently recurrent cases are really chronic, with exacerbations. No doubt the relief that a patient experiences after recovery from the acute symptoms may be sufficient to make him disregard the discomfort of slight symptoms. Put another

way, one receives the impression that complete recovery between attacks is uncommon.

The Acute Type.

The acute type, the most important and interesting variety, included twelve patients, with only one recovery. From first onset of symptoms one patient was dead in sixteen days, two died in thirty days, three in five weeks and one in two months. In the others the course extended from three to eighteen months. The remarkable feature of this group is the rapid and almost inevitable progression to a fatal ending in spite of treatment. A disease capable of reducing a healthy person to a moribund state in two or three weeks cannot fail to impress the observer with its terrible severity. It is this type which gives us our museum specimens and our knowledge of the final ravages of the disease, to which reference has already been made.

The Chronic and Recurrent Types.

In one chronic case, extending over five years, in which appendicostomy was performed with slight improvement, the patient died from septic thrombosis of the internal capsule. A number have been readmitted to hospital from time to time for further treatment, but the majority have been either cured or sufficiently relieved not to report for treatment.

SYMPTOMATOLOGY.

The well-known features call for a little comment, particularly the pulse rate.

Diarrhœa in three cases was curiously nocturnal; in two cases entirely so. The number of motions is sometimes not related to the severity of the disease.

Blood is naturally an impressive feature to the patient. Its amount is noticeably variable; sometimes it is sudden in appearance and profuse in amount; and sometimes it is profuse shortly before death. Even with extensive ulceration, as seen *post mortem*, there may have been little bleeding.

Pain may be absent or in some cases entirely rectal in the form of tenesmus. The majority of patients complain of abdominal pain, variable in time, degree and position; most often it is hypogastric, but sometimes it is felt on the left side along the line of the colon, where tenderness may be elicited. Any severe degree of tenderness should make us think of impending or actual perforation and peritonitis. In one gravely ill patient I failed to recognize the presence of peritonitis till the abdomen was opened under local analgesia to establish a colostomy or ileostomy.

The highest recorded leucocytosis was 15,000 cells per cubic millimetre, the majority of cases showing a slight increase up to 12,000; in one fatal case there was a leucopenia.

Pyrexia of some degree, usually slight to moderate, is commonly present, and the more severe cases exhibit an irregular temperature of septic type, rising occasionally to 39·4° C. (103° F.).

The pulse rate is of great importance. A maintained rate of 120 is of the gravest significance, and indicates a fatal termination in nearly all cases. Hern,[3] in an admirably complete survey of fifty Guy's Hospital patients, calls attention to this, and states that only one of his patients who exhibited this feature recovered. The present series confirms his observations, and its prognostic value should be emphasized. (See accompanying chart.) On the other hand, at the commencement

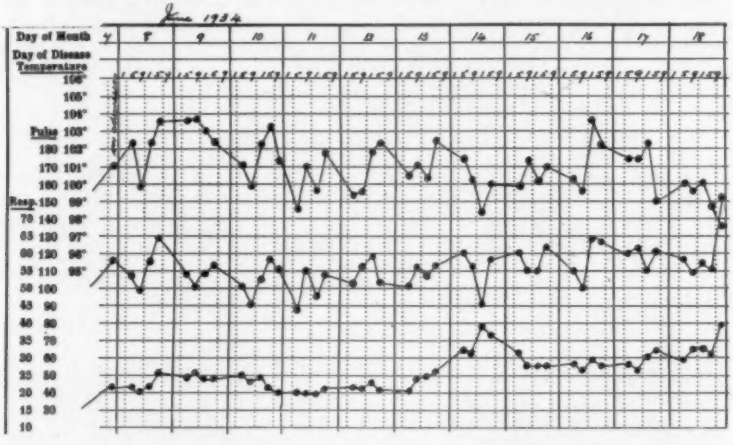

Chart in a fatal case of acute ulcerative colitis in a student of nineteen years, showing persistently rapid pulse rate. The whole course of the disease in this youth lasted one month.

of a sharp attack a pulse rate of 120 or more, with pyrexia, is not uncommon, but in the course of two or three days a drop occurs and a general improvement is manifested.

DIAGNOSIS.

The main points in the symptomatic diagnosis have already been discussed. I shall refer briefly to the two decisive methods of examination, the use of the opaque enema and sigmoidoscopy.

The opaque enema is of supreme importance in estimating the severity and extent of the disease, and in watching progress, detecting stricture formation and so on. It is unnecessary to recapitulate the well-known features of the disease. Loss of haustration, the drain-pipe colon, contraction and spasm are well exemplified in Figures I, IIA, IIB, IIIA and IIIB. The use of the opaque enema is forbidden in the severest cases, as the solution cannot be retained.

The sigmoidoscope gives accurate information of the condition of the bowel that it reaches as to the severity of the colitis and the depth of the ulceration; it gives decisive information as to stages of healing. Though sigmoidoscopy is condemned by an eminent medical authority, it is surely unreasonable to neglect an accurate method of investigation which is devoid of danger if properly employed, and which offers the chance of detecting an unsuspected malignant focus.

TREATMENT.

Patients were admitted to the medical wards for treatment, and only those of the more severe types were referred to the surgeon. Medical treatment was on accepted lines by diet, drugs and irrigations; some patients had autogenous vaccines prepared from fæcal organisms, and some anti-dysenteric serum as advised by Hurst. My medical colleagues inform me that no patient responded to serum treatment in any way indicative of its specific value. Blood transfusion, often repeated, was employed when indicated, with little benefit.

Surgical Treatment.

While most will agree that surgery in ulcerative colitis is at best a *pis aller,* that is no excuse for an attitude of pessimistic nihilism in this disease which demands close and sympathetic cooperation between physician and surgeon if its victims are to get the best that medical art offers.

In the present series the operations are few, and as surgical treatment was invoked only for severe cases, it is difficult to arrive at a just estimate of its mortality and its benefits. The operations employed may be stated as follows.

1. *Appendicostomy.*—Three patients were subjected to appendicostomy. One died the day after operation; one received slight relief for three years, the patient dying from septic cerebral thrombosis, active and advanced colitis being found *post mortem*; the third operation gave no relief and had to be followed by an ileostomy.

2. *Ileostomy Alone or with Caecostomy.*—Four patients were submitted to ileostomy alone or with caecostomy. One died two weeks after operation. One was saved by the ileostomy after appendicostomy had failed, and is capable of work, though his health is permanently impaired. The third improved so much that the ileostomy opening was closed after a year, the patient recovering after a difficult convalescence; her later history is not known. The fourth was much benefited, but later developed a progressive arthritis requiring colectomy. Reference may be made to another case of ileostomy, that of a student not included in the series, who has greatly benefited and carries on his work.

3. *Ileac Colostomy.*—One patient was submitted to ileac colostomy. This patient, though having a limited extent of colitis, had severe symptoms. Her condition is much improved.

4. *Ileo-Sigmoidostomy with Ileac Colostomy.*—One patient was submitted to ileo-sigmoidostomy with ileac colostomy. This patient was improved symptomatically, but further exacerbation required medical treatment.

5. *Total Colectomy.*—Two patients were submitted to total colectomy. One has so far done well; the other died five weeks after operation.

From an analysis of those cases in which the patients were submitted to operation, the strong impression derived in relation to the individual gravity of the colitis is that complete exclusion of the colon, preferably by ileostomy, is the type of operation for first choice; and that it may be a life-saving measure. The terribly destructive changes seen in the colon after death appear to preclude any reasonable hope of relief from lesser operative procedures in the graver acute cases.

MORTALITY.

Thirteen patients in all died (32·5%): nine died under medical treatment, and four after operation (10%).

PROBLEMS ARISING IN SURGICAL TREATMENT.

The series under present consideration is large enough to afford only general impressions, so I shall briefly review the opinions of others. In the first place it will be agreed that patients with ulcerative colitis should be admitted to the medical side for investigation and treatment, but that there should be close cooperation between physician and surgeon, so that the patient with the worse type of condition may not lose the chance of benefit which opportune surgery may confer. The attitude that regards ulcerative colitis as more or less exclusively medical is indefensible, and can result only in avoidable loss of life and in discredit to forlorn-hope surgery.

The chief problems arising for review are: (i) When should surgery be undertaken? (ii) What operation should be chosen? (iii) How should it be performed? (iv) What is the chance of subsequently restoring bowel continuity?

1. *When Should Surgery be Undertaken?*

Lahey[4] writes cogently:

> We have repeatedly said to ourselves and to audiences when discussing this subject, that ileostomy in ulcerative colitis is like the question of when to apply transfusion. The time to do a transfusion is when one is debating as to whether or not it should be done. The time to do an ileostomy, while not exactly similar, is, with some reservations, at the time when one debates with the gastro-enterologist whether or not an enterostomy should be done. Our worst mistake in connection with this situation is that we have deferred the operation until it was too late for the patient to be benefited by it.

No words could be more apposite, and the likely error in judgement and a frequent cause of regret is to delay operation too long in the

hope of saving the patient from an objectionable and persistently unpleasant operation. If ileostomy or caecostomy is the operation of choice, as will be discussed later, one must have considerable heart searchings before deciding to inflict, very possibly on a young patient on the threshold of active life, a most unpleasant remedy, which may have to be tolerated indefinitely or permanently.

Certain criteria may help in deciding for surgery:

1. A persistently rapid pulse rate of 120 or more per minute with associated severe general condition. As already remarked, such a pulse rate is of the gravest prognostic significance, and in my view constitutes a definite call for surgery and for the recognition on the part of the physician, who has the initial handling of the patient, that a temporizing policy will probably be disastrous. In acute cases of the kind discussed in the section on clinical types, delay of a week or ten days may be justified to determine progress, but in the light of the pathology and the usual total involvement of the colon, these cases should be regarded as essentially surgical, failure to improve or a continued progression downhill demanding surgery without delay.

2. The information obtained from the barium enema especially, determining wholesale disease in the colon, and to a much less extent that obtained from the sigmoidoscope as to the severity of the disease in the lower reaches, may help in the decision. Unfortunately, some patients are already so gravely ill on admission to hospital that immediate examinations of this sort are precluded. It is here that blood transfusion and glucose infusions may play a useful part in bringing about a temporary improvement, admitting a more complete examination.

At this point one may refer to the specific treatment associated with the name of Bargen[5] of the Mayo Clinic. In an editorial, the Horgans[6] ask: "When should an ileostomy be performed in ulcerative colitis?" They give the answer: "Only when repeated attempts to isolate Bargen's diplococcus or treatment by his vaccine have failed." Though Bargen's work has met with considerable support in America, it has by no means universal acceptance there, and less in Great Britain.

The reports emanating from the Mayo Clinic are so impressive and encouraging that one cannot but feel that one has been lacking in resolution and persistence in not applying its methods. At the same time, it is impossible to escape the impression that in the desperately bad acute cases the state of the colon is such as to place it beyond the scope of serum and vaccine therapy. The situation is altogether different in the chronic and recurrent forms.

2. *What Operation Should be Chosen?*

In primary surgical treatment there are two types of operation available: (*a*) appendicostomy or valvular caecostomy, (*b*) ileostomy or wide caecostomy. These are based on entirely different principles, the first type aiming at increasing the efficiency of irrigation of the

colon, while the drastic second type aims at excluding the ulcerated colon and putting it at rest.

Though appendicostomy (and we may include its counterpart, valvular caecostomy) has the powerful advocacy of Lockhart-Mummery, it is hard to see how it can accomplish much more than can be accomplished by irrigation from below, even granted that the irrigation is more effective. My concern is chiefly with the severe type of ulcerative colitis, and in the light of the pathology and associated toxæmia it is almost inconceivable that irrigation, however effective, can better the situation materially in these desperately ill patients. It is most perplexing that the operation in other hands may be of great value, and yet be ineffective in personal application, for in my observation appendicostomy has been of little benefit.

Ileostomy (or its approximate, but less effective rival, wide caecostomy) seems to be the only operation which adequately meets the requirements of this type of case. It is admittedly a heavy price to pay, and one which the surgeon is loath to exact; and yet the principle of putting the entire colon at rest appears inevitable. This position being accepted, the choice between ileostomy and caecostomy no doubt will be largely personal. Santee[7] advocates a liberal caecostomy as providing adequate drainage, opportunity for irrigation and easy closure, but ileostomy appears generally to be the more favoured operation as having the supreme advantage of insuring absolute exclusion of the colon with the disadvantage of a more difficult closure if this appears warranted by subsequent improvement. It should be remembered that, though the caecum may not be attacked by the ulcerative process, it often is affected, and the handling and cutting of the highly infected wall of the gut in caecostomy may be dangerous. In one of my cases the ulceration even extended into the last sixty centimetres (two feet) of the ileum; and this occasional occurrence may account for the gangrenous type of infection of the abdominal wound which sometimes follows operation. In the main, it may be stated that ileostomy is the operation of choice in that it insures absolute rest and avoids handling the friable and dangerous colon.

In ulcerative colitis resection of the colon is essentially a secondary surgical procedure. Its indications are fortunately restricted, and its chief application is in those cases of ileostomy in which the subsequent changes in the large bowel result in stricture formation producing imperfectly drained pus-containing sacculations. My experience of total colectomy for colitis is limited to two patients. Both were young women in whom the whole colon was affected, both had had ileostomy performed a year previously, and both had rheumatoid arthritis. One has yielded a gratifying result and the advancing arthritis has cleared up. The other died five weeks after operation. Though the colon in each appeared superficially to be passably healthy, the dangers of operation in such cases were driven home by the associated numerous, grossly enlarged, soft and œdematous glands as an index of septic absorption.

Other forms of operative treatment, such as colostomy and ileo-sigmoidostomy, can be so rarely indicated as to require no further discussion.

3. *How Should Ileostomy be Performed?*

The simplest method of ileostomy is the best. The abdomen is opened through the right rectus under local or combined local and gas anæsthesia, and a generous loop of the ileum about thirty centimetres (one foot) from the caecum is brought out, the mesentery is perforated and the loop is supported by a glass rod or rubber tube. The red and angry appearance of the colon and the great friability so readily demonstrated in the *post mortem* room are a warning against any unnecessary handling and exploration. The limbs of the loop are fixed to the parietal peritoneum by a few points of suture and the excess of the wound is closed. I have left the opening of the ileum for thirty-six to forty-eight hours, and then cut it across almost completely in order to secure an absolutely efficient spur. Performed in this way, the operation can be speedily completed with minimum handling. Others add a valvular caecostomy for irrigation. This is unnecessary, for irrigation can be effectively carried out from below.

Others prefer a single-barrelled ileostomy, but it matters little what method is chosen, provided an efficient spout 2·5 centimetres (an inch) or more long is secured which will carry the ileal effluent more or less directly into the receiving bag, avoiding constant soaking of the abdominal wall by the irritating bowel contents.

I have observed one patient with an ileostomy who had developed a perforation of the discharging loop just beneath the skin. She had an intractable, diffuse eczematous ulceration caused by the leakage from this fistula and was most miserable in consequence. The bowel was freed, a generous spout was provided, and in three days the eczematous condition had entirely cleared up.

If the patient maintains a simple care of the skin with zinc cream and empties the bag sufficiently often to prevent overflow, there will be little or no complaint of skin irritation or leakage.

An ileostomy, like a colostomy, is not such a formidable affliction as many think. In the successful cases it has its justification in the rapid improvement in the patient's condition and general outlook. It is, of course, makeshift surgery, but in the light of our present knowledge of ulcerative colitis it is an operation fully justified in carefully selected cases, and one which is performed too seldom or too late.

I am encouraged in this connexion by occasional visits from a young man on whom some five years ago I reluctantly performed ileostomy. He presents the appearance of robust health, finds his ileostomy quite tolerable, has spent many months in back country camps living on indifferent food while engaged in geophysical survey, and bids fair to become an ornament of an important Government scientific department.

Ileostomy, like some forms of colostomy, is not exempt from the subsequent development of small gut obstruction; it is exceedingly

difficult to guard against this unfortunate complication by any arrangement of the ileostomy beyond placing the afferent loop below as it lies in the abdominal wound.

4. *What Are the Chances of Restoring the Bowel After Ileostomy?*

Here we are on uncertain ground. The bowel of one patient of the present series was restored after a year and the patient recovered, but was lost sight of. The profoundly severe cases seen *post mortem* give the strong impression that healing could result only in the conversion of the colon into an inert fibrous tube incapable of propulsion, and we may conclude that in some cases in which recovery occurs after ileostomy, healing must be accompanied by this result. The possibilities of closure can be estimated only on the basis of symptomatic recovery and the state of the colon as revealed by the opaque enema and the sigmoidoscope. The time factor is of little help, and the likely temptation at the solicitation of the patient will be to attempt too early a closure. Lahey[4] reports such a case. I have under observation one patient who was subjected to ileostomy and who after eleven years still has occasional minor attacks of colic with temporary discharge of blood and mucus. The extreme probability of the ileostomy being permanent must be laid clearly before the patient in discussing operation, for at the present time it is fair to assume: "Once an ileostomy, always an ileostomy."

SUMMARY.

1. A series of 40 cases of idiopathic ulcerative colitis of purely New Zealand origin is analysed.

2. The high percentage of acute cases forms the striking feature, and chief attention has been devoted to the problems arising in this severe and often rapidly fatal type.

3. The high incidence in young people is demonstrated.

4. The bacteriological findings were as disappointingly negative as they are commonly found to be.

5. The total mortality was 32·5%.

6. Surgical treatment is discussed and the value of a timely ileostomy is emphasized.

ACKNOWLEDGEMENTS.

My thanks are due to those of my colleagues who have permitted me to utilize their records.

REFERENCES.

[1] *The British Medical Journal*, March 21, 1931, page 504.

[2] "Discussion on Ulcerative Colitis", *Proceedings of the Royal Society of Medicine*, April, 1931.

[3] J. R. B. Hern: "Ulcerative Colitis", *Guy's Hospital Reports*, July, 1931, page 322.

(4) F. H. Lahey: "Surgery in Ulcerative Colitis", *Surgical Clinics of North America*, Volume ii, April, 1931, page 246.

(5) J. A. Bargen: "Experimental Studies on the Etiology of Ulcerative Colitis", "Collected Papers of the Mayo Clinic", 1924, page 241.

(6) E. and J. Horgan: *Surgery, Gynecology and Obstetrics*, 1929, page 595.

(7) H. E. Santee: "Ulcerative Colitis", *Annals of Surgery*, Volume lxxxvii, May, 1928, page 704.

A SURVEY OF PROSTATIC SURGERY TODAY.[1]

By J. W. S. LAIDLEY,
Sydney.

A STAGE has arrived in the development of the surgery of the prostate which is not only interesting but very complex. Until a very few years ago matters were fairly simple. At that time, when confronted with a prostate demanding surgical treatment, a surgeon removed it through an incision which was usually suprapubic but sometimes perineal, and a proportion of the patients recovered.

Now things are different. We are not only confronted with a third surgical method of relieving prostatic obstruction, but also with a host of refinements to the old and simple operative procedures. Voices are heard in all directions advocating this or that operation as a surgical panacea, with the result that not only the general surgeons, but the urologists themselves, are wondering what it is all about. Should a surgeon abandon old well-tried methods, buy a host of new and expensive instruments, and learn a new technique, or is this merely a phase which in a few years will pass into the limbo of forgotten things? This address was prepared in the hope of answering this question.

THE PERINEAL OPERATION.

Of the two open operations, probably the perineal operation possesses the fewer adherents. There are several reasons for this. First, it is technically more difficult than the suprapubic operation, and needs much practice and specialized instruments if it is to be performed well. A second reason for its comparative non-popularity lies in the extremely severe penalties which attend a failure in technique. To cause a fæcal fistula, or to leave the patient with permanent incontinence of urine, is a nightmare; and these unfortunate results may occur unless the operation is carried out by practised hands. The suprapubic operation is not subject to these mishaps, and the average man who uses it will produce far fewer walking monuments of the surgeon's lack of skill. The lack of popularity of the perineal operation, however, is no fair measure of its success in skilled hands. On the contrary, its protagonists include some of the greatest names in urological surgery, and of these only two need be mentioned: Hugh Hampton Young, of Baltimore, and Frank Hinman, of San Francisco. In hands such as these the operation reaches its greatest heights, and their results are unsurpassed by any

[1] From an address delivered at a meeting of the Royal Australasian College of Surgeons, Hobart, November, 1935.

exponent of any other method throughout the world. Figures mean little, but Hugh Young has performed 2,300 of these operations with a mortality of 2·8%. Further, it is significant, as Hinman points out, that no exponent of perineal prostatectomy has abandoned his operation for the transurethral method of prostatic resection.

THE SUPRAPUBIC OPERATION.

There have been many refinements since Freyer removed his first prostate, and these will have to be considered in some detail. What is probably the greatest improvement of all has received the least publicity, but almost certainly it is this alone that has reduced the mortality rate of this operation to 5% or under. I refer to the slow but now widespread recognition of the huge part that sepsis plays in the pre-operative and post-operative death rate. It is an absolute truth that surgeons with low death rates have good nursing organizations, and also that they spend far more time thinking about their patients before and after than they do at the actual time of operation. A pioneer in this direction was Sir John Thompson-Walker, and the reason for the lack of publicity given to this improvement is probably the fact that it is fundamental groundwork and cannot be shown off before an admiring theatre audience.

Good results are obtained by the same efficient but unobtrusive care and organization that achieve the unvarying asepsis in our operating theatres today. As a practical instance of this, in 1926 the death rate at the Royal Prince Alfred Hospital from suprapubic prostatectomy was in the region of 25%, and had stood at about that figure for years. At that time the pre-operative and post-operative treatment was in the hands of several untrained wardsmen, who combined their prostatic duties with other work, such as carrying coal, transporting food, and doing *post mortem* room work. On investigation it became evident that four out of every five deaths were due to pyelonephritis. It seemed that any change could be only for the better, and the treatment of these patients was put in the hands of the female nursing staff for twelve months. There was no improvement. A second change was made, and treatment was put in the hands of the resident staff for twelve months. Again there was no improvement. Finally, a suitable individual from among the wardsmen was selected, thoroughly trained in the principles of asepsis and antisepsis, and given complete charge of the catheter changing and irrigations. The result was immediate. The death rate fell to about 5%, and has been in that vicinity ever since. The man selected takes pride in his work, and is well aware of the fact that if sepsis does occur, nobody has touched the patient but himself. Here, then, is a fundamental and prime necessity for success: the concentration of patients under one responsible person, whose sole duty is the well-being of those patients.

As far as prostatic surgery is concerned, pyelonephritis is "the captain of the men of death", and the urologist must employ every means in his power to reduce its incidence to a minimum. Statistics show that hæmorrhage and uræmia cause very few deaths. Uræmia has been dealt

with most effectively in the past by the realization that gradual decompression is necessary when there is a large amount of residual urine. Its death rate is still further lowered by the appreciation that when operation is risky it is best done in two stages; and more recently a further weapon has been added to our armoury in transurethral prostatic resection. This phase of the subject will be dealt with later in its logical position. At present there are matters for consideration with regard to the more recent efforts to control the third main cause of death—hæmorrhage.

To leave out of consideration hæmostatic methods, such as packing the prostatic cavity, inflatable rubber bags and other mechanical aids, the most striking improvement in the control of hæmorrhage has been brought about by the gradual development of the technique of suturing the bladder neck. Thompson-Walker was again a pioneer. He inserted his sutures in purse-string fashion round the posterior two-thirds of the bladder neck, he usually packed the prostatic cavity lightly with a little gauze as "scaffolding for clot", and drained the bladder with both suprapubic tube and catheter. This was a tremendous advance, but it was destined to be superseded in efficiency by the method of Harris. This method is so successful in controlling the primary and reactionary hæmorrhage that he and many other exponents of this method are happy to close the bladder without suprapubic drainage. There is no doubt whatever that this method is a real and a great advance in the control of hæmorrhage.

There are arguments both for and against closure without suprapubic drainage. Closure without drainage leaves the surgeon extremely vulnerable if secondary hæmorrhage occurs, and in the present state of our technique secondary hæmorrhage is still likely to occur from time to time. With two-way drainage, by catheter and suprapubic tube, the bladder may be rapidly emptied of clot, and once this is done there is generally no more trouble. With only catheter drainage, evacuation of clot is a far more difficult matter. Failure means a return to the theatre, reopening the wound and packing, and this last hurdle is sometimes too much for the patient, whose condition as a rule is not the best fitted to withstand a hæmorrhage followed by not inconsiderable surgical trauma. Another point to be considered is that the bladder after prostatectomy is a septic cavity, and good drainage is of the first importance.

In favour of closure, of course, is the prospect of obtaining primary healing and a short convalescence. This is a very happy result, but the intelligent use of a suprapubic tube does not materially lengthen convalescence, and has the other very useful advantage of being a reassuring safety valve. There is yet another point in this connexion. For closure of the bladder to be safe, the nursing staff must have reached a very high pitch of training in the post-operative treatment of prostatectomy. These patients need careful and unremitting attention for the first forty-eight hours, and the nurse must not only be constantly on the watch for catheter blockage through clot, but must be able to

deal immediately and on her own responsibility with this emergency when it does arise.

Many surgeons prefer to use a suprapubic drain as well as a catheter. The tube may be of a soft rubber, and not a large one. It is left in for about forty-eight hours, or until there is no fear of clots forming in the catheter. If a secondary hæmorrhage occurs later on, it is an easy matter to slip a rubber catheter into the bladder through the suprapubic sinus and once again to establish two-way drainage. Some surgeons prefer to leave the suprapubic drain in for about ten days or more, until there is no fear of secondary hæmorrhage. I do not feel that this is absolutely necessary. It has been pointed out above that the sinus remains open for some days after the tube has been removed, and, if hæmorrhage occurs, a catheter can be slipped along the track into the bladder. Another annoyance about a tube left in for a week or more is that the edges of the wound invariably slough where they are in contact with the tube, and, in old men, epithelialization of this area is often very slow, and may take weeks after the patient is otherwise well. Before leaving the subject of drainage, I should like to mention that effective and cleanly method of keeping the catheter in position by a suprapubic stitch. This is a great advance on the old strapping method, and if the catheter is left in until healing is well advanced, it is usually not necessary to replace it.

There has been yet another advance which has gone hand in hand with hæmostasis, namely, reconstruction of the bladder neck with a view to obtaining primary healing in the area of the prostatic cavity, thus avoiding secondary hæmorrhage and minimizing post-prostatectomy morbidity. In this, too, work of great value has been done by Harris, and is being enthusiastically followed up by Clifford Morson, who at the recent British Medical Association annual meeting in Melbourne indicated an aim, which, however, he confessed he was unable to achieve in all cases, that of uniting the mucous membrane of the bladder with the mucous membrane of the urethra, and thus obliterating the prostatic cavity altogether.

To describe briefly a conservative but modern technique, I would say, first of all, give your whole attention to your pre-operative and post-operative nursing. Until this reaches a high standard of efficiency, it is waste of time and effort to attempt improvement in prostatectomy results by adopting any of the recent refinements of technique. When you are satisfied with your nursing organization, learn to perform an operation of this type. Make an adequate incision, so that every step of the operation can be performed under vision, and also so that during the actual enucleation the heel of the hand can pass between the rectus muscles and thus enable the prostate to be shelled out without the necessity of putting a finger into the rectum. Once a prostate is out, the plastic and hæmostatic part of the operation is embarked upon, and for this a lighted retractor of the self-retaining type will help a great deal. Trim away any tags, insert hæmostatic and plastic sutures, complete the operation by passing a catheter which is maintained in

position by a suprapubic stitch, and drain suprapubically with a small soft rubber tube. If this is carried out in a workman-like fashion, the immediate and ultimate results will be very satisfactory.

THE TRANSURETHRAL OPERATION.

Let us turn now to the question of transurethral resection, which is exceedingly popular in America. For the last two years I have used it fairly intensively, both in my public work at the Royal Prince Alfred Hospital and in private practice, and to date the staff of the department at the Royal Prince Alfred Hospital has performed rather more than 170 of these operations.

This method will probably never achieve the eminence of a prostatic panacea. With the present instruments, I feel that the average urologist will not be able so to improve his technique that he will be justified in abandoning the open operation. As against this, one of the world's greatest urologists, Hermann L. Kretschmer, of Chicago, has now performed about seven hundred consecutive resections with only one prostatectomy.

As far as the operation itself is concerned, it is a most difficult technical procedure, even for an experienced endoscopist, and it takes many cases, deep thought and hard work before one can attain confidence and efficiency in its performance. First and foremost, it is necessary to have an extremely clear idea of the macroscopic appearances of the pathological prostate, and to those who are interested I can recommend no better exposition of this subject than a magnificent monograph by A. Randall, Professor of Urology at the University of Pennsylvania. Secondly, the surgeon must develop the ability to correlate the rectal and cystoscopic findings into a clear mental image of the type of prostate with which he is dealing, and of the portion of the gland tissue which is causing the obstruction. Finally, he must develop honesty of judgement, so that he can give a reasonable opinion as to whether the removal of that obstructing tissue is within his technical powers.

So far, we have been concerned only with pre-operative considerations, but now some of the difficulties of the operation proper may be discussed. First and foremost is the question of accurate localization of the cutting loop at all times during the operation, and this is not easily learned. There are two landmarks which are of the greatest value. Distally there is the *colliculus seminalis*, or the verumontanum, and proximally there is the anterior half of the bladder neck. The anterior half of the bladder neck is mentioned for the following reason. Nearly all pathological enlargements of the prostate are either lateral or posterior, and, consequently, if at any time during the operation the surgeon's sense of location becomes doubtful, he has only to turn the instrument upside down and the anterior portion of the bladder neck can be at once identified. Unless the surgeon is prepared never to make a cut without knowing exactly where that cut is being made, it is better for him not to use the resectoscope. It is because

of careless cutting that much disrepute has been thrown upon this method, for it is in this way that the rectum is entered, or the bladder wall is cut through to the peritoneum or perivesical space.

Next, during the operation one must learn to control hæmorrhage rapidly, progressively and effectively. Never proceed with the operation while the wash water is deeply blood-stained, but seal each vessel as it is cut. To do otherwise is to ask for post-operative trouble. Finally, one must learn to cut effectively the tissue presented to the loop. At first this is not easy; the loop tends to slide over the surface of the lobe rather than to bite through it. The difficulty here is that poor cutting may be due to one of two causes. It may be due to the fact that the electro-surgical unit needs adjustment, or that the resectoscope is not being held in the position of the best mechanical advantage to cut through the tissue. The best way to remedy this is as follows. Learn by experience the minimum amount of cutting current necessary when the spark gaps on the machine have been recently and properly adjusted, and never depart from this reading. If the loop is not cutting, have the spark gaps adjusted, and then, if the loop is still not cutting, it is because it is not being brought in contact with the tissues at a sufficient angle. The use of the minimum current is an excellent safeguard in another direction. It will be found by experiment that prostatic glandular tissue is more easily cut than is plain muscle. Consequently, if the minimum current that will cut prostatic tissue is used as a routine, it will be found extremely difficult to cut through bladder wall should the surgeon lose his bearings. In this way a major surgical accident may be avoided.

The question is often asked: how much tissue should be removed? If the bladder neck is regarded as a clock face with twelve o'clock anteriorly, as much tissue as possible should be removed from two to ten o'clock between the bladder neck and the verumontanum. This, of course, refers to cases in which lateral lobes are an obstructing element. When the cause of the obstruction is a simple median bar, or a subcervical middle lobe, there will be no need to extend the resection beyond the limits of the obstructing element. To make a very general statement, unless there is a definite anterior lobe, it is better to avoid the anterior segment of the bladder neck. Apart from this area, all prostatic tissue should be removed which can be engaged by the loop from the bladder neck to the verumontanum, while a minimum cutting current is being used.

After completion of the operation a good sized catheter is inserted, and the patient is returned to bed. The catheter serves two purposes: it acts as a hæmostat to the urethral end of the raw area, and it insures adequate drainage for the immediate post-operative period. If good hæmostasis has been obtained during the operation, the urine will usually be clear in four days or less, when the catheter can be removed and the patient instructed to pass his water. Sometimes a certain amount of post-operative œdema occurs, when the attempt to pass water may be unsuccessful. When this happens the catheter is reinserted for a few more days.

As far as my own results are concerned, I have had no instrumental accidents of note in the series. One patient, who had an inflammatory enlargement of the prostate, developed a periurethral abscess three weeks after operation, and two others developed a pin-point meatus and subsequently underwent meatotomy. The mortality has been very low, only three deaths having occurred in 170 cases. Two patients apparently died from uræmia, and the third, who had a severe degree of myocarditis, died of heart failure about the tenth post-operative day. In connexion with the mortality there is one point I particularly wish to stress. In 170 cases only four patients have been refused operation, and the series includes many patients who would inevitably have been denied prostatectomy. When considering mortality rates it is important to bear this in mind. Practically speaking, there is no post-operative shock, and I do not now feel justified in denying the possibility of relief to any patient unless his demise is imminent. In the series there have been several patients considered too ill for prostatectomy, and who had been subjected to permanent cystostomy elsewhere. With one exception, these have been adequately dealt with by transurethral resection, the tube has been removed, and the suprapubic sinus has closed and remained closed.

The post-operative course has been remarkably smooth and free from anxiety. Occasionally mild secondary hæmorrhage occurs up to the fourteenth day, but so far there has been only one real adventure with hæmorrhage.

Prostatectomy on this patient being too risky, a permanent cystostomy was performed elsewhere. I attempted a resection, but the first cut caused such furious hæmorrhage that it took the best part of an hour to secure hæmostasis, and the operation was not proceeded with. There was no trouble till the tenth day, when an extremely severe secondary hæmorrhage occurred, evidently from the same vessel. Fortunately, there was two-way drainage, the clot was evacuated, and, after receiving a transfusion of blood, the patient settled down without further surgical measures.

The functional results must be discussed in a little more detail, and before doing so it will be necessary to summarize briefly prostatic pathology. In a case series of any size we have to deal with the following conditions:

A. Neoplastic enlargement: carcinoma.
B. Inflammatory enlargement: median bar hypertrophy.
C. Hyperplastic enlargement: (i) middle lobes (*a*) commissural, (*b*) subcervical; (ii) lateral lobes; (iii) anterior lobes; (iv) combinations of two or more of the above.

The above list comprises all the common enlargements of the prostate, and, as far as hyperplastic enlargements are concerned, may be further divided into small, medium and large.

First of all, I shall discuss the results with regard to the pathology alone, without taking into consideration any of the other variable factors, such as expectation of life, or renal function.

With regard to the carcinomata, it has been possible with one exception to avoid suprapubic cystostomy. There are about twenty in

the series, and the functional results have been good. In several instances resection has been carried out for over a year, and so far the patients have not required a second operation.

For median bar the results have been extraordinarily good. A complete relief of symptoms has occurred in every case, and so far the results have been permanent.

To pass on to the various conditions of hyperplasia, the results of pure middle lobe hypertrophy, whether commissural or subcervical in origin, and whether of small, medium or large size, have been uniformly good. A case of anterior lobe hypertrophy has not yet been met with.

With regard to lateral lobes, there is a distinct falling off in the result *pari passu* with increase in size of the gland. The functional results in all cases of small lateral lobe enlargement leave little to be desired. In a few of those of medium size the result has not been satisfactory, though in the majority of cases both surgeon and patient were entirely satisfied. The large lobes have proved more difficult. Several patients have needed two resections, and in two cases there was no relief after two resections, and suprapubic prostatectomy was carried out.

With regard to those cases in which the obstructing element is a combination of two, three or four lobes, it can be said that the results seem to depend upon the size of the lateral lobe involvement. When the lateral lobes were of small or medium size the results were good. When the lateral lobes were large, the results began to fall off.

Although there have been many excellent results with large hyperplasias of all varieties, there have been a few failures, and it is difficult to say beforehand: "This patient will do well", or "This patient will not do well". Consequently, from this point of view alone, I do not consider transurethral resection the operation of election in cases of prostatic hyperplasia when the lateral lobes are large and are partly or wholly the cause of the obstruction.

Some of the other variable factors associated with this complex question may now be considered. So far, the prostate has been discussed. Now the subject will be dealt with from the point of view of the patient. The first consideration is his expectation of life, not his age. Many a man at seventy has a longer expectation of life than another at sixty. This question is an important one from the point of view of recurrence. Unfortunately, transurethral resection has not been carried out for a sufficient number of years to demonstrate the frequency of recurrence. All that can be said is that so far in this series there has been no recurrence, and in America, where the operation has been carried out for five years, there do not seem to be reports of many recurrences. To deny the possibility of recurrences is absurd. They must occur. They occur after prostatectomy. It has been said that recurrence after prostatectomy is always due to incomplete removal of the adenoma. I am sure that is not so. Many recurrences after prostatectomy arise from the non-adenomatous prostatic tissue which is never removed. The point is that

at this stage we cannot say what the percentage of recurrence will prove to be; consequently, it is my opinion, at the present time, that suprapubic prostatectomy is the operation of election in men who are good surgical risks, who have a long expectation of life, and whose prostatic obstruction is due to lateral lobes of medium to large size. Small lateral lobes are always worth resection. The resection is not extensive, a good result is a practical certainty, and if a recurrence occurs later on in life, the resection can either be repeated or suprapubic prostatectomy can be carried out.

Another factor which seriously influences the surgeon's choice of operation is the influence of renal function. To any practising surgeon it is superfluous to stress the point that not only is the renal function in prostatic enlargement usually impaired to a greater or less degree, but that there are many cases in which after prolonged drainage the renal function does not recover sufficiently to make the surgeon confident about the post-operative fate of his patient. For some patients, of course, prostatectomy is out of the question, and they have hitherto had to end their days with a catheter life or a suprapubic tube. But there is also a considerable number who necessarily fall into the category of doubtful cases. In transurethral resection there is a loophole for these two classes of patients, whatever their prostatic condition may be. Relief by transurethral methods should always be attempted for those patients for whom prostatectomy is out of the question, whatever the nature or size of the prostate, and it should also be carried out in most of the more doubtful risks. The odds are greatly in favour of complete symptomatic relief, but in any event, if a resection fails to give relief, there is no contraindication against performing a cystostomy. Furthermore, the surgeon has the satisfaction of having done everything possible for the patient.

There are many conditions to which this opinion applies besides those patients with poor renal function.

One patient in the series had two cerebral hæmorrhages within a year of operation, and his systolic blood pressure was at one time over 300 millimetres of mercury. He obtained complete relief, and his blood pressure is now below 200.

Another patient subjected to resection had an advanced carcinoma of the stomach and was a living skeleton. He had unfortunately developed retention of urine, and it was impossible to send him to a home for the dying where his bladder could be catheterized. The resection did not disturb him in the least, his urine was clear in twenty-four hours, and he voided easily and comfortably on the fourth day. That he died ten days later was unfortunate, but it was not due to the resection—he died of starvation.

These cases are quoted because they are extreme examples of what can be done. One more case should be mentioned briefly—a failure this time.

The patient was an obese old man of seventy-five years of age, with a large adenomatous prostate. His renal function was so poor that he could excrete no phenolsulphonephthalein in the first hour, and there was only a trace excreted in the second hour. Prostatectomy was out of the question, as his function did not improve at all after catheter drainage. So I decided to attempt a resection, although the prostate was far from being suitable for that procedure. As much

tissue as possible was removed, but his retention still persisted. Finally I decided that further attempts at resection were probably doomed to failure and unjustified, and performed a cystostomy. His condition caused far more anxiety after the cystostomy than it did after the resection, though the former took about fifteen minutes and the latter over an hour.

CONCLUSIONS.

In an attempt to sum up, I feel today that a urological surgeon should be a master of two operations. He should be able to perform on the adenomatous prostate a modern suprapubic operation, or a perineal operation if his training and inclinations lie in that direction. He should also train himself thoroughly in the transurethral operation, as without this ability I feel he will neither satisfy himself nor will he satisfy a sufficiently large proportion of his patients. Theoretically the operation is a bad one. An adenoma is an adenoma and should be completely removed, but there are so many cases in which partial removal achieves the same result as radical removal, and so many cases in which radical removal is impossible, that practically the method is an extremely useful one. I cannot imagine being without the means of transurethral resection so long as the treatment of hypertrophy of the prostate remains surgical.

In conclusion, for the prostatic patient with good renal function, sufficiently urgent symptoms, good expectation of life, and a medium to large adenomatous prostate which includes lateral lobes, open operation should be performed. Then there is a borderland in which the personality of the surgeon will decide whether open operation or transurethral operation shall be performed; and finally there is a very large group of cases, comprising possibly the majority of all enlarged prostates, in which transurethral surgery is the operation of choice. This group includes without equivocation all cases of carcinoma, all median bars, all grossly infected prostates, commissural and subcervical middle lobe enlargement and all cases of small lateral lobe hypertrophy. In addition to these, the transurethral operation should be performed on all patients with poor expectancy of life, and in all cases of severe renal deficiency, or other pathological conditions which would render prostatectomy a risky procedure. Finally, it should be used for all those who are beyond prostatectomy and who otherwise would be condemned to a suprapubic tube or catheter life.

Surgical Technique.

TECHNIQUE OF GASTRO-ENTEROSTOMY.

By Sir Hugh Devine,
Melbourne.

In 1935, in a paper on the surgical treatment of duodenal ulcer (The Australian and New Zealand Journal of Surgery, October, 1935), I referred to the fact that gastro-enterostomy, in suitable circumstances, was an effective treatment of duodenal ulcer. But I pointed out that gastro-enterostomy was an operation which was extremely difficult to perform, because the technique depended upon the physiological and pathological condition of the particular patient at the time; and I also stated that it was an operation which demanded very special care.

I am now setting out in detail what I consider to be the most satisfactory method for gastro-enterostomy. The illustrations in this paper are drawn from photographs of my own operations, and they represent the exact technique, even to the art of suturing, for there is a right and a wrong way to suture tissues. They thus reflect accurately operation-room methods.

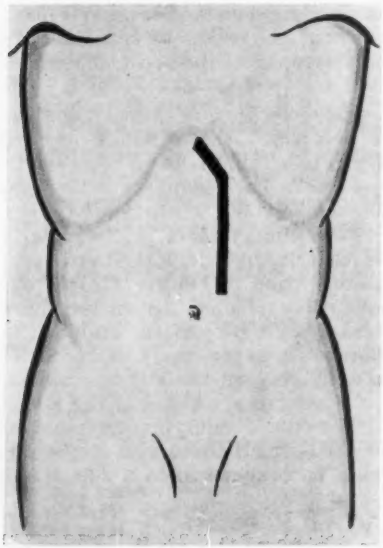

Figure I. Left paramedian incision.

The Incision.

A left paramedian incision, 10·0 centimetres (four inches) long, is made, the incision commencing at the lower margin of the ribs. (Figure I.) The edges of the wound are covered with closely woven cloth towels; the Devine operating frame is inserted into the wound, and is used to expand the wound and to clamp the bowels firmly in position. (Figure II.)

Reduction of Anæsthetic.

Once the retractor is inserted, the anterior abdominal wall, which contains sensory nerves, is spared further handling. Since the intestines do not contain sensory nerves, the anæsthetist can, if the surgeon is gentle in his movements, reduce to a minimum the anæsthetic that is being administered; and he can maintain this "light anæsthesia" till such time as the abdominal wound is to be closed. When the wound is being closed the anæsthetic must be increased for a few minutes in order to get relaxation of the abdominal muscles. In this way it is possible to use a very light ether anæsthesia; and this should be the routine method for the average type of patient. Where, however, the patient is a bad risk, nitrous oxide gas and oxygen, with a little ether here and there when relaxation is required, will be the anæsthetic of choice.

Routine Abdominal Exploration.

As a preliminary to a proposed gastro-enterostomy, the diagnosis must be verified and then a general abdominal exploration carried out.

Verification of the Diagnosis.

It is first necessary to verify the diagnosis. For example, when the gastro-enterostomy is being undertaken on a diagnosis of duodenal ulcer, it may be difficult to demonstrate the ulcer. The ulcer may not show very definitely on the serous surface; or, if it does give indications on the serous surface, the indications may be difficult to distinguish from those of the scar of a healed ulcer; or, again, the ulcer may be on the posterior wall, where it cannot be felt or seen from the external surface of the duodenum. When doubt exists as to the presence of an ulcer, an incision should be made in the prepyloric part of the stomach, sufficiently big to permit a gloveless finger to be inserted through the pylorus. (Figure III.)

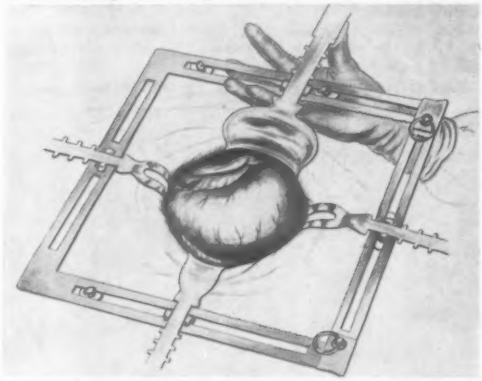

FIGURE II. Insertion of the Devine operating frame for exploration of the duodenum.

An ulcer too small to be felt by external palpation of the duodenum can be detected by the bare finger exploring the mucous membrane in the lumen of the duodenum; the pulp of the finger will stick to an ulcer in the same way as it will to the sucking pad of a small shell-fish.

General Abdominal Exploration: Search for Infective Foci and Coincident Disease.

The surgeon must then, as a routine, explore the rest of the abdomen. He must first search for possible causes of gastric or duodenal ulcer: for any source of infection, and for any evidence of associated disease, which would lower the vitality of the gastro-duodenal wall. He must, therefore, make a routine examination of the gall-bladder, of the appendix, and of the colon for diverticulitis. He must look for an inflammation of the abdominal lymph glands—a not uncommon occurrence. He must examine the liver, which may show early cirrhosis; and, in enlargement of the spleen, he must seek for signs of early disease of the hæmatopoietic system.

FIGURE III. Incision in prepyloric part of stomach.

Examination and Removal of Appendix.

As a general rule, it is better to remove the appendix before beginning the bigger operation of gastro-enterostomy. In the anxiety to find any

"septic focus", which may have been the cause of the ulcer, the surgeon cannot afford to leave an appendix in the abdomen, whether it is obviously affected with any chronic or subacute inflammation or not; he must remove it, for it might at some time or other have been a septic focus and the original cause of the ulcer.

Through this high upper left abdominal incision, the appendix is removed in the following way. Using the abdominal retractor (as shown in Figure II), the surgeon lifts the abdominal wall away from the intestines and creates, out of a potential body cavity, an actual cavity into which he can look and examine the appendix as it lies clearly in view; he can do this without even disturbing the intestines. The abdominal wall is now held up by the retractor in such a way that the artificial light shines through it; and, looking from the abdominal cavity,

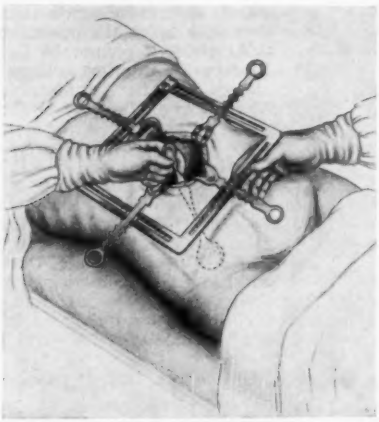

FIGURE IV. Spoon protecting intestines from injury when making stab wound through abdominal wall.

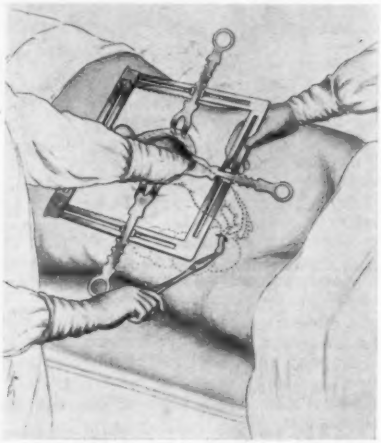

FIGURE V. Appendix pushed through the stab wound with the left hand inserted through the upper wound and grasped with the Spencer Wells forceps held in the right hand.

the surgeon can see where it is tendinous and devoid of vessels and where he can make a stab wound without causing bleeding. A spoon (Figure IV) is now placed inside the abdomen opposite this tendinous and bloodless spot, and a small stab is made through the abdominal wall onto the spoon, which protects the intestines from being wounded by the knife stab. A Spencer Wells forceps is now inserted through the tiny wound; and the appendix, which is plainly visible through the upper wound, and which is held by the left hand, is grasped with the forceps, drawn through the stab wound (Figure V), and removed in the usual way. One suture suffices to close the stab wound. Thus it is possible to remove the appendix through an incision made on the left side, and so high that a partial gastrectomy can be easily carried out; thus, also, is avoided the necessity for a long right-sided paramedian incision, usually employed so that the appendix can be removed through it, an incision which not only lessens the virginal strength of the abdominal wall, but also does not permit of the performance of any kind of gastric operation.

The operation of gastro-enterostomy is now commenced.

Making an Opening in the Lesser Peritoneal Sac.

The first step of the operation is to open the lesser sac through an aperture in the gastro-colic omentum, and thus to make accessible the posterior wall of the stomach. This is done with the object of making the anastomosis between jejunum and stomach above the transverse colon; it can be made here more easily and much more precisely than below the transverse mesocolon, where it is usually made.

The lesser sac is opened by choosing a site in the gastro-colic omentum where there are no vessels, making a small hole into it, and gently enlarging the opening so that no vessels are torn.

Making an Opening in the Transverse Mesocolon.

Through this gastro-colic opening an opening is made in the mesentery of the transverse colon, while it is stretched and held up against the light so that blood vessels may be seen and avoided. (Figure VI.)

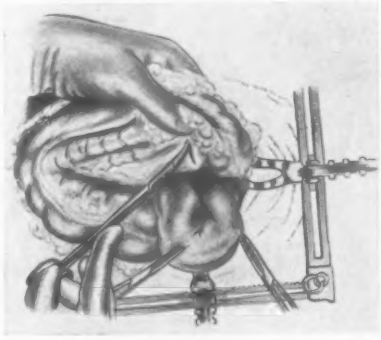

FIGURE VI. Making an opening in the transverse mesocolon.

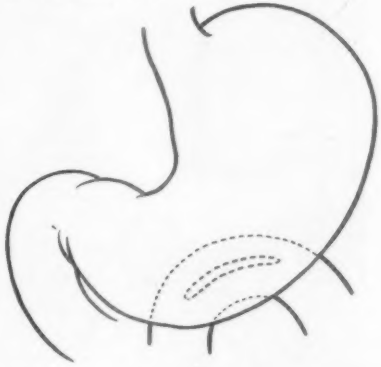

FIGURE VII. A diagram showing a usual site for a stoma.

Choosing the Site of the Stoma on the Stomach.

The site of the stoma is marked out on the stomach by scratching with a needle. The object of this exact marking-out of the stoma is to make sure that it is placed exactly as desired; for if this precaution be not taken, it is very easy to misplace or to ill-shape the stoma when the stomach is turned over in order to apply to it the jejunal loop. In my opinion, the proper site for the stoma of a posterior gastro-enterostomy is indicated in Figure VII. However, it is my belief that, in most circumstances, it is better to make the stoma coincide with the greater curve. This is especially necessary in dealing with the small stomach with which a duodenal ulcer is often associated, or when the stomach is made small as a result of the extensive suturing which must follow a resection of an ulcer of the lesser curve. This position of the stoma avoids the formation of shoulders or angles in the afferent and efferent loops, a complication which is very likely to occur in these small stomachs as a result of an upward traction of the stomach on the transverse mesocolon. Moreover, the upward projection which this site confers on the efferent loop facilitates regurgitation of the alkaline duodenal contents—*Der innige Apotheke*. The convalescence in those cases of gastro-enterostomy in which I had placed the stoma on the greater curve was so smooth that I have now adopted this situation for the stoma in all gastro-enterostomies. It is, of course, necessary to clear away the vessels from that region of the greater curve where the stoma is to be placed. (See Figure VIII.)

The vessels lying on the proposed site of the stoma are separated from the stomach with the dissecting scissors, and are clamped, cut and tied, as shown in Figures VIII and IX.

Choosing a Site for the Opening in the Jejunum.

When choosing the site for the opening in the jejunum, it must be remembered that the jejunum is always longitudinally contracting and relaxing, and that the site should be selected in the phase of contraction. If the site is chosen during the phase of relaxation, the loop will be too short when it contracts, and the slightest torsion in such a short loop will produce a mechanical disability in the gastro-enterostomy; short loops of this type cause more mechanical errors in gastro-enterostomy than the much maligned long loop.

The situation of this site should be such that the afferent loop is neither too long nor too short. It should be placed about 1·25 centimetres (half an inch) posterior to the antimesenteric border, so that, when the first two layers of

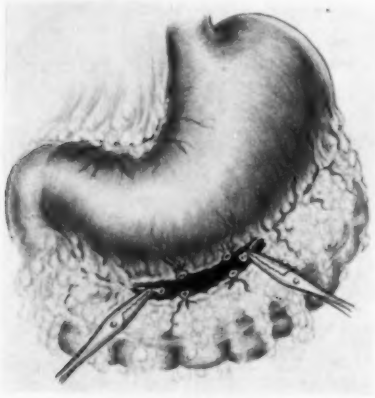

FIGURE VIII. Amputation of the vessels of the greater curve so that the stoma can be placed on it.

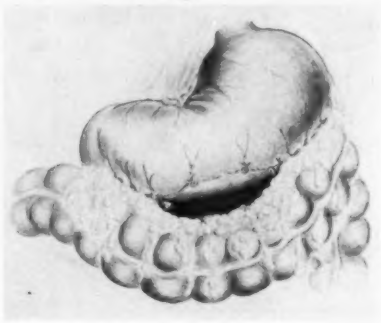

FIGURE IX. Diagram of stomach showing the vessels of the greater curve cut and tied, and the greater curve turned upwards, so that its actual line—the line of the proposed stoma—can be seen.

sutures are inserted, the line of the stoma will fall exactly opposite the mesenteric border. The site is marked by placing at each end of it a guy-rope suture, by means of which the jejunal loop is drawn up through the opening in the transverse mesocolon. (Figure XI.)

Deflation of the Stomach.

Air and any gastric contents in the stomach are aspirated by means of a trocar connected to a suction pump (see A, Figure XI), and the small opening thus made is closed with a suture (see B, inset, Figure XI). A collapsed stomach is much easier to operate on than one in its normally distended state; further, collapse of the stomach permits of more accurate suturing, lessens the possibility of forming angles and kinks, and is thus an important precaution in avoiding the mechanical errors which are so prone to occur in a gastro-enterostomy.

Making the Anastomosis.

In making the anastomosis, clamps ordinarily used to prevent soiling by gastric contents and to control bleeding are not employed. Soiling by gastric contents is avoided by "vacuum cleaning" the stomach by aspiration. All bleeding vessels are at once clamped and tied. The gastric and jejunal segments

are held in position and in the right degree of tautness by the guy-rope sutures (see Figure XI), which are fixed to the opposing sides of the frame. The guy ropes should have just sufficient tension to make a slight ridge at the line of junction of the gastric and jejunal segments; by holding the suture firmly with the left hand, as shown in Figure XIIA, this ridge can be accentuated, and

FIGURE X. Jejunum drawn through the opening in the transverse mesocolon.

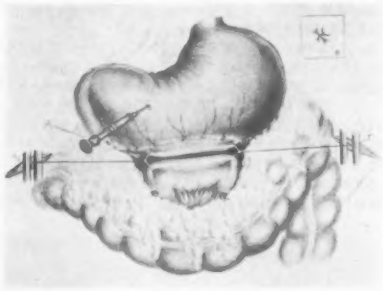

FIGURE XI. Showing site on stomach for stoma (greater curve) to which is applied the jejunal loop. Guy ropes are seen holding the two segments together, stretching them tautly and fixing them to the operating frame. A: Trocar inserted in the stomach for aspiration of air and gastric contents. B (inset): Opening closed with a suture.

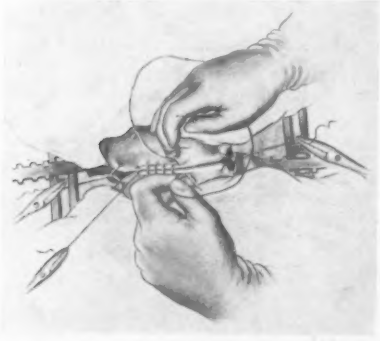

FIGURE XIIA. Method of suturing. Serous suture. Note the method of holding the needle and the thread, suturing to the surgeon.

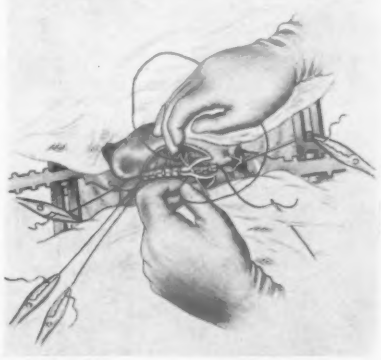

FIGURE XIIB. Method of suturing. Sero-muscular suture.

will serve to make suturing easy and accurate. Any large vessels near the proposed stoma are under-run with catgut. The anastomosis is made by three tiers of sutures: a serous, a sero-muscular, and a mucous membrane tier.

The serous surfaces of stomach and intestine are united with number 0 chromicized catgut (Figure XIIA), the suturing being made towards the operator.

The most rapid and effective method of suture is as follows. Use a straight needle. Keep a fixed constant tension on the jejunal and gastric segments by

the guy-rope retraction to the frame. Make the first finger and thumb of the left hand pull on the thread, holding it close, so as to make the ridge more definite; make the second finger act as a support, against which the needle can be pushed. Depress the shank of the needle with the pulp of the second finger of the right hand, at the same time directing its point upwards, so that it is in position to be grasped by the fingers of the left hand lying ready in position to pick it up. In this way, rapid and accurate suturing is attained—not infrequently a life-saving measure.

Incisions in the sero-muscular layer of the jejunum and the stomach, as far as the mucous membrane, are now made, and their edges are sutured, the second layer of suturing being thus formed. (Figure XIIb.)

The mucous membrane of the stomach and of the jejunum is incised; vessels are clamped as they bleed, and are tied with number 0 catgut; an aspirator is placed in the mucous membrane opening in the stomach, and the stomach is "vacuum cleaned" of its contents. The aspirating tube must be pushed far into

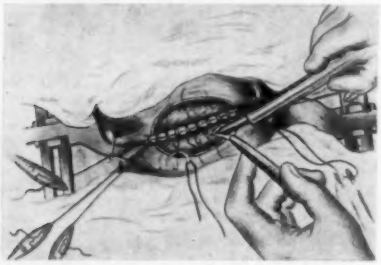

FIGURE XIIc. Method of suturing. Under-running vessels in the mucous membrane and vacuum cleaning of stomach through an opening in the mucous membrane.

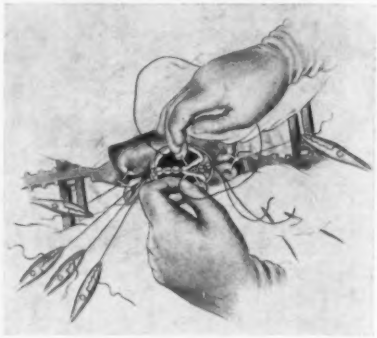

FIGURE XIId. Method of suturing. Suture of the posterior layer of the mucous membrane.

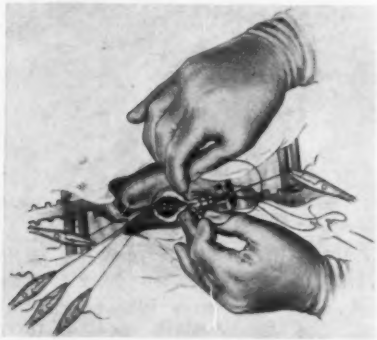

FIGURE XIIe. Method of suturing. Suture of the anterior layer of the mucous membrane. (Note how the fingers are disposed in suturing the anterior tier, suturing away from the surgeon.)

FIGURE XIIf. Method of suturing. Suture of the anterior tier of the sero-muscular layers.

the fundus of the stomach, and up towards the dome of the left part of the diaphragm, for this is the place where stomach contents collect when the patient is in the recumbent position. The jejunum, as its name signifies, is generally empty, and it need not be aspirated. (Figure XIIc.)

The posterior edges of the mucous membrane openings are now united by a continuous suture of number 0 plain gut. (Figure XIID.)

The anterior rows of mucous membrane and sero-muscular sutures are now completed, the suturing being carried out away from the operator. (Figures XIIE, XIIF and XIIG.) As each layer is finished, it is painted with tincture of iodine. This antiseptic precaution is especially necessary when the contents are of low acidity, for example, in gastric cancer, and, therefore, are probably not sterile like those of high acidity, as in the case of duodenal ulcer.

Thus, an anastomosis is made in three layers without the aid of clamps, and every bleeding vessel is tied. These are cardinal principles which insure almost certain healing in suturing segments of bowel together.

With the object of avoiding a kink of the afferent and efferent loops as they enter and leave the anastomotic opening, the sero-muscular sutures should be about 18 millimetres (three-quarters of an inch) longer than the actual opening in the stomach. It is important to take especial care to avoid a kink or shoulder in the efferent loop as it leaves the stoma, for it places the wall of the jejunum at a right angle to the jet of acid chyme, and, therefore, in the same relative position as the anterior lateral wall of the duodenum—the favourite site for duodenal ulcer—thus predisposing to the formation of jejunal ulcer. The anastomosis is now drawn through the openings in the gastro-colic omentum and the transverse mesocolon and, by means of interrupted sutures placed in the stomach, is allowed to project about 2·5 centimetres (an inch) below the mesocolic opening. (Figure XIII.)

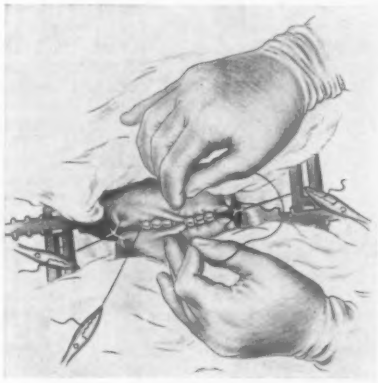

FIGURE XIIG. Method of suturing. Suture of the anterior tier of the serous layer.

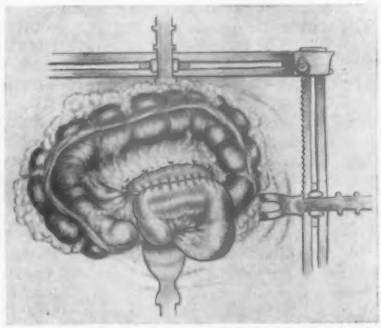

FIGURE XIII. Showing the anastomosis well below the mesocolic opening and the stomach sutured into it.

The more the stomach can be made to project comfortably into the greater peritoneal sac, the less likelihood is there of the formation of torsions, angles or shoulders where the afferent and efferent loops approximate to the stomach. And to attain this end in the small stomach is one of my objects in placing the stoma on the greater curvature.

The omentum is now displaced upwards so that it will lie behind the abdominal wound and thus keep the small intestines from adhering to the scar in the abdominal wall; it does not matter if they adhere to the omentum, but it is a serious matter if they adhere to the abdominal wall.

The wound in the abdominal wall is closed in the usual way.

Case Reports.

AN UNUSUAL INJURY.

By T. CLUNIE,

Surgeon, Colonial War Memorial Hospital; Director of Clinical Studies, Central Native Medical School, Suva, Fiji.

A MALE adult Punjabi was admitted to hospital at 3.40 p.m. on March 20, 1935. The patient's condition on his admission necessitated the usual treatment for shock and the intravenous administration of gum saline solution. As the patient was an agriculturist, and the wound was said to have been inflicted by a cane knife, one thousand five hundred units of antitetanic serum were administered. The X ray examination revealed the unusual injury depicted in Figure I. The head and upper shaft of the right humerus appeared to have been vertically split as far down as a point distal to the surgical neck of the bone. The outer fragment had been rotated, presumably by the twist of the weapon causing the injury as it was withdrawn, aided and maintained in the new position by the traction of the muscles attached to the greater tuberosity, so that the external aspect of the outer fragment rested against the raw surface of the wound of the inner fragment, while the raw surface of the outer fragment gaped into the skin and muscle wound. Such an unusual injury was very naturally diagnosed as a fracture-dislocation by the doctor who had carried out the necessary preliminary treatment. It was actually a fracture-dislocation, but of a most unusual type, in that a portion of the head of the bone was without the joint capsule, while there was attendant solution of the continuity of part of the bone.

Operation.

On the day following the patient's admission to hospital, his condition improved and operative reduction and fixation were considered. Under general anæsthesia the wound was opened up and enlarged, the gauze was removed, and irrigation with saline solution was carried out. The bone had been cleanly cut just external to the bicipital groove, and internal to the humeral insertion of the supraspinatus muscle. The rotated outer fragment was reduced and fixed in position by two ivory pegs driven through it into the main fragment which was in place in the joint socket. (See Figure II.) The capsule was stitched with fine catgut and the periosteum with kangaroo tendon.

No attempt was made to ascertain the condition of the circumflex nerve, as such a search carried with it the danger of opening up a fresh avenue of infection. The wound edges were trimmed, and the upper part of the wound was lightly approximated by silkworm gut sutures. The lower end was left open for drainage and irrigation. Sixty cubic centimetres of antistaphylococcal serum were administered intramuscularly. The exposed thumb joint was irrigated with mercurochrome and the wound was stitched.

After-Treatment.

A compatible donor stood by in case blood transfusion was required, but his services were not called for.

The patient was nursed well propped up in bed, with the injured limb in a Thomas arm splint in a position of comfortable abduction, with the elbow joint

in line with the front of the chest and the humerus externally rotated 15° from the horizontal—the optimum functional position, and the position which allowed relaxation of the external rotators and the supraspinatus muscle. Eight hours after operation, Carrel-Dakin tubes were inserted into the wound and continuous irrigation with eusol was carried out. On March 22, 10,000 units (U.S.A.) of gas gangrene antitoxic serum were administered subcutaneously.

Progress.

The patient's temperature before operation was 37·8° C. (100° F.). Thereafter it swung irregularly between normal and 37·8° C. (100° F.), but never above this, and continued normal after the thirteenth day following the operation. Carrel-Dakin irrigation was continued until March 26, and eusol compresses were used

FIGURE I. Showing the position of fragments on the patient's admission to hospital.

FIGURE II. Showing position following open operation and pegging.

thereafter. The stitches were removed from the upper end of the wound on March 29. Massage and passive movements were carried out after the tenth day; active movements were used after the wound showed good progress towards healing—after the fifteenth day, when the patient used an aeroplane splint during the day.

Result.

The patient was discharged on May 17. He was detained in hospital for treatment of anæmia due to hæmorrhage following his wound and previous hookworm infestation. On two occasions during convalescence he underwent anæsthesia for the breaking down of adhesions in the affected joint. He did not cooperate very well in joint movements, probably because a court action concerning his case was pending. When seen on May 25, he could abduct his arm almost to a right angle without scapular movement. The circumflex nerve did not appear to have been injured, the deltoid showing no wasting beyond that which could be attributed to disuse.

Seen on September 11, the patient had a fairly full range of movement of the joint, the only limitation being that he could not lift the arm straight above

the head, probably because abduction to a right angle is not complete with the scapula fixed (see Figure III). As the supraspinatus initiates abduction, it appears that action of this muscle has not suffered. The limitation of full deltoid abduction is probably due to subacromial adhesions.

The Weapon which Caused the Injury.

The weapon which caused the injury was a cane knife—a garden or plantation instrument to be found in every native or Indian house in Fiji. This knife is made of a piece of pressed metal one-sixteenth of an inch thick. The

FIGURE III. Showing range of movement after healing of wound.

FIGURE IV. The type of knife that caused the injury.

blade is fifteen inches long clear of the handle, with a depth of two and three-quarter inches at the end, widening to three and a half inches about the middle, and tapering to one and three-quarter inches at the hilt. The hilt is composed of two flat pieces of wood riveted to the narrow end of the blade (see Figure IV). The instrument is used extensively by natives and Indians for grass and cane cutting.

Acknowledgements.

I am indebted to the Honourable Dr. A. H. B. Pearce, Director of Medical Services, Colony of Fiji, and to Dr. W. M. Ramsay, Acting Chief Medical Officer of the Colony of Fiji, for allowing me to publish this article. I am also indebted to Dr. D. C. M. Macpherson, Acting Radiologist, and to Mr. F. A. Taylor, Radiological Technician, for the care taken with the skiagrams and clinical photographs relating to this case.

UNUSUAL CASES OF CAECAL CARCINOMA.

By LEO DOYLE,

Surgeon to In-Patients, Saint Vincent's Hospital, Melbourne.

THE following are the relevant details of an unusual case of carcinoma of the ileo-caecal valve.

Mr. C., aged sixty years, came to town from a country district, where he had been told he was suffering from gall-stones. He stated that for the past

FIGURE I. The conical end of the intussusception can be seen in the skiagram. That it should be taken for a carcinoma of the transverse colon is not surprising.

six months he had had recurring attacks of pain in the epigastrium. These were associated with vomiting. There was no definite history of constipation.

On examination, he was well developed, slightly wasted and slightly anæmic. Examination of his cardio-vascular, respiratory and urinary systems revealed no abnormalities. On abdominal examination there was a large mass in the upper

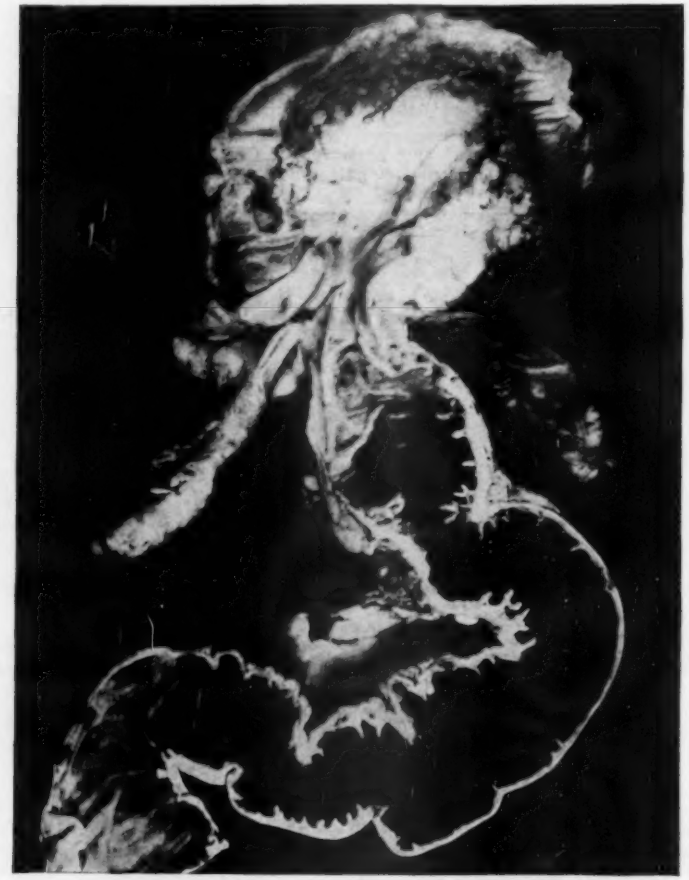

FIGURE II.

part of the abdomen on the left side under the costal margin. The mass was freely movable. X ray examination with a barium clysma was done by Dr. John O'Sullivan, who reported as follows: "Barium enema. The whole of the colon was outlined without any difficulty, as far as about the middle of the transverse colon. Here there was an obstruction that could not be overcome. The radiological

appearances are those of a neoplastic involvement of approximately the junction of the middle and distal thirds of the transverse colon. The films show the condition very clearly." (See Figure I.)

On November 29, 1935, operation was performed under combined local anæsthesia, abdominal wall block and ether given by Dr. S. J. Newing.

The abdomen was opened by a left upper paramedian incision. A large tumour was delivered easily, after an adhesion to the spleen had been divided. The tumour was found to consist of both large and small intestine, the latter

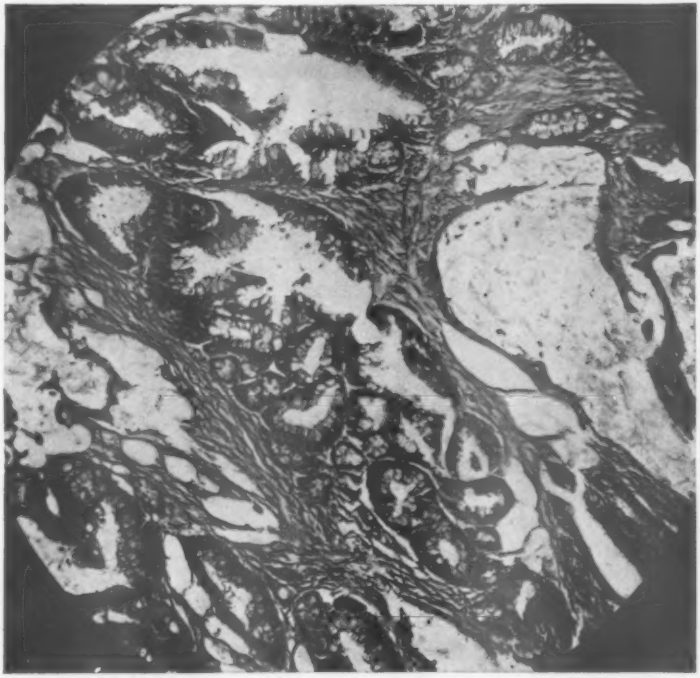

FIGURE III.

appearing to run into the tumour as a dilated viscus and from it as a small collapsed one. The exact nature of the lesion was not apparent for some time, until on tracing the collapsed bowel down it was found to end suddenly, and was then recognized to be the vermiform appendix, greatly swollen and enlarged. Examination now showed that the mass was an intussusception, the head of which was a large mass in the bowel. It could not be completely reduced, and therefore it was resected and an end-to-side anastomosis was done; a drain was passed through a stab in the right flank, and the wound was closed. Convalescence was uneventful, and the patient left hospital in twenty-one days.

Dr. Eric Cooper, of the Pathological Department at the Melbourne University, was kind enough to mount and photograph the specimen. He also made a photo-

micrograph, and these comprise Figures II and III. In Figure II the intussusception has been almost entirely reduced, but the essential details are plainly visible. Figure III shows the growth at the ileo-caecal valve to be a typical adenocarcinoma. None of the conditions found in the patient, namely, an unrotated caecum, an ileo-caecal carcinoma, and an intussusception, is uncommon, but the combination of all three provided a particularly difficult tangle to unravel, particularly when one was quite certain that the patient had a carcinoma of the transverse colon.

Acknowledgements.

I am indebted to Dr. Eric Cooper for his excellent photograph and photomicrograph, and to Dr. John O'Sullivan for the reproduction of his X ray film.

TWO CARCINOMATA OF THE LARGE BOWEL.

By Leo Doyle,
Melbourne.

Mr. H.D. was first seen on November 7, 1931, suffering from intestinal obstruction, the result, as it was eventually shown, of a ring carcinoma of the sigmoid. The obstruction was relieved by a caecostomy done under local anæsthesia, and fourteen days later a typical Paul-Mikulicz operation was performed. Recovery from this was uneventful.

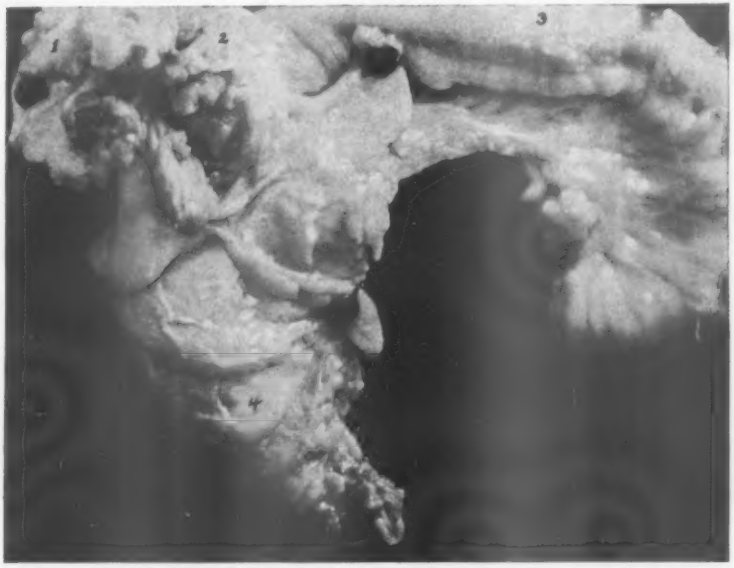

Figure I. The tumour after removal. 1. Skin around caecostomy. 2. Incision has been made in the caecal opening, and the carcinoma is obvious. 3. Ileum. 4. Caecum and ascending colon.

He was next seen on November 13, 1933, when he had a *fistula in ano*, resulting from an ischio-rectal abscess of some months before. At this time he was carefully examined for signs of recurrence, but nothing could be felt, and X ray examination with a barium clysma, by Dr. J. O'Sullivan, revealed a normal looking bowel, with no sign of stricture at the anastomotic site.

The patient preferred to have nothing done about the fistula at this time, and was not seen again until early in February, 1936. He now had several fistulæ. Abdominal examination revealed a puckering of his caecostomy scar, and a small, hard, reddish nodule on one side of it. There was also what

appeared to be a mass to be felt adherent to the scar. X ray examination again revealed no trouble at the site of the previous resection, and was of no value in determining the character of the caecal mass.

The reddish nodule on the scar was excised; Dr. A. Brenan sectioned it and reported that it was adeno-carcinoma, covered by a squamous epithelium.

Operation was undertaken on February 14 under spinal anæsthesia. An incision was made, the old scar was excised with portion of the surrounding muscles. When the abdomen was opened the mass was found to be in the

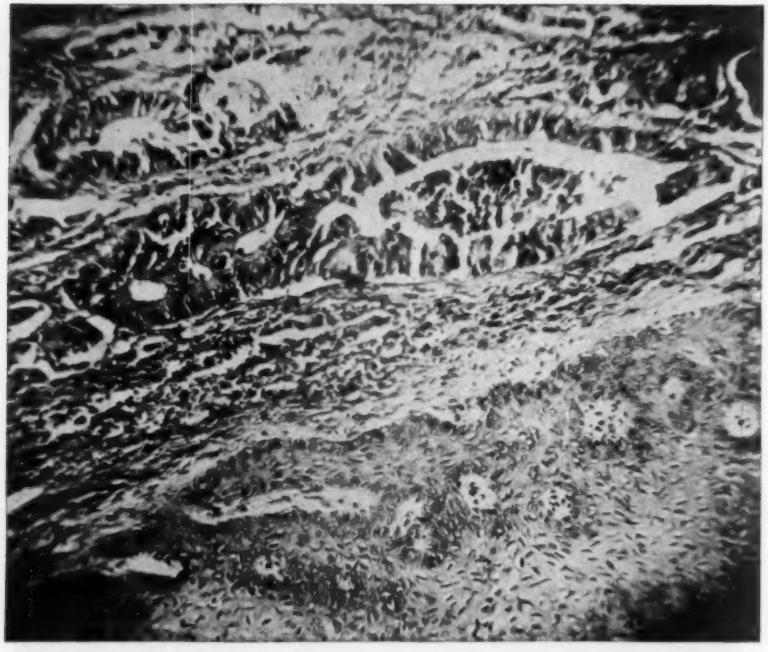

FIGURE II. Photomicrograph showing adeno-carcinoma.

caecum. A typical Wright colectomy was done, the Furniss Dawson clamp was used and the anastomosis was end to side. Recovery was uneventful.

The case is reported as being either a second carcinoma of the colon, or one possibly of implantation from the original carcinoma into the scar of the caecostomy. It is interesting to note that it produced no symptoms, and that had it not been for the patient's having another reason for visiting a surgeon, the condition would have not been noticed until far greater changes had been produced.

Figure I shows the carcinoma lined track leading from the caecum to the skin.

The photomicrograph (Figure II) shows adeno-carcinoma covered by squamous epithelium and the typical appearance of adeno-carcinoma on the deeper parts of the growth.

Acknowledgements.

I am indebted to Sir Hugh Devine for the picture of the gross specimen, and to Dr. Eric Cooper for his photomicrograph.

The Australian and New Zealand Journal of Surgery.

All articles submitted for publication in this journal must be typewritten and double or treble spacing should be used. Each article should conclude with a brief summary and statement of conclusions. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without any abbreviation: Initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal together with that of the journal in which the abstract has appeared, should be given, with full date in each instance.

When illustrations are required, good photographic prints on glossy gaslight paper should be submitted. Line drawings, charts, graphs and so forth should be drawn on thick white paper in India ink. Authors who are not accustomed to prepare drawings of this kind, are invited to seek the advice of the Editor if they are in any doubt as to the correct procedure. Skiagrams can be reproduced satisfactorily only if good prints or negatives are available.

VOL. VI. JULY, 1936. No. 1.

THE ANNUAL MEETINGS OF THE COLLEGE.

As it is now almost ten years since the College held its first annual meeting in Canberra, a critical review of the educational value of the annual meetings and of the experience gained in conducting them may help in the planning of future meetings and, in particular, of the tenth annual meeting, which is to be held in New Zealand in January, 1937.

The annual meetings of the College are, perhaps, one of the most valuable means at its disposal for continuing the education of the practising surgeon. The older countries of the world have long known the value of meetings of surgeons: they have been the means of disseminating the kind of surgical knowledge that is best gained by personal contact.

Even in the short period of ten years the benefit that has accrued to Australasian surgery is much greater than it would appear. In the first place, the meetings have been the means not only of bringing together the surgeons of the several States of Australia, but also of

forging a bond of union between Australian and New Zealand surgeons. In the second place, these meetings have served as an inducement for surgeons to take a holiday each year in one or other of the capital cities, where they can see their surgical colleagues at work, and where they can talk "shop" with them round the fireside or the dinner table. Moreover, for the surgeon who has recently travelled, they are a kind of "clearing station" where he can broadcast his experiences to his fellow surgeons. They have provided audiences—audiences intensely interested in the art of surgery—to which the surgeon can relate clinical discoveries and new methods, and from which he can receive encouragement and criticism based on experience.

Though much has been done through the agency of these meetings, there is much more to do; their value to Fellows can be enhanced. The first essential is that they should be well attended: there must be a large and critical audience. Fellows who contribute papers or who give demonstrations sometimes spend months in preparation, and, naturally, are bitterly disappointed when their surgical colleagues are not present to criticize, advise and encourage. It should be a point of honour for Fellows to attend, for they are building surgical history for Australasia. Fellows resident in the State in which the annual meeting is being held should regard it as a duty to be present; for, as far as their surgical knowledge is concerned, they are hosts, as it were, to the Fellows from the rest of Australasia.

Papers could be both produced and delivered in a more interesting manner. Experience has shown that, no matter how good a paper is, it never rivets the attention of the audience if it is long and if it is read, especially if it is read without reference to lantern slides. A short address, delivered without notes and illustrated by lantern slides, is most appreciated. Any attempt to obtain completeness in a subject frequently ruins a paper; the audience can complete its knowledge from the published paper or from literature. What an audience of surgeons wants is to hear the original views of the lecturer, his own experiences, his criticisms of methods that he has learned to distrust, his experience of the standard methods, his results: in short, it wants what is in his "heart", and what must come out quite naturally if his subject matter has been carefully prepared.

Papers delivered at the annual meetings should also be considered from the point of view of the Editorial Committee of THE AUSTRALIAN AND NEW ZEALAND JOURNAL OF SURGERY. Papers prepared for the journal

and for delivery should be of two different types: a paper for publication should be a clear and complete exposition of the subject, with, if possible, a bibliography; a paper that is delivered should be an *exposé* of the "high lights" of the subject, and should, if possible, be richly illustrated. It is almost impossible for an audience, in the short space of time at the disposal of the lecturer, to follow a paper as it is written for publication.

Experience has shown that operative demonstrations could be better arranged. Notwithstanding this fact, they have been most attractive to the Fellows. They have, however, suffered from the disadvantage that only a few Fellows at a time can really see the operation. But when operations have been going on in batteries of theatres, that is, when the men can wander from theatre to theatre, or when operations are going on at the same time as demonstrations in adjoining rooms, the continual circulation of the spectators relieves congestion. Demonstrations of operations, not necessarily difficult, but showing the application of some particular principle, introduced or followed by an explanatory lecturette, have been one of the most instructive features of meetings.

Sessions in university departments have been of especial interest. Demonstrations in anatomy, physiology, pathology, or demonstrations in a university surgical department (such as those arranged at the last annual meeting in Sydney by Professor Dew) have been very much appreciated.

The discussions are not quite satisfactory. It has not been found possible, so far, to develop to its full extent this most useful feature: to elicit briefly personal views, follow-up results, operative mortality rate, and other valuable experiences. If Fellows would come to discussions armed with their own well-thought-out and well-set-out experiences, prepared in the quietness of their studies, with their case records in front of them, their discussions would not only enliven, but also enrich the clinical research side of annual meetings.

We feel sure that the tenth annual meeting of the College will reach the high-water mark of efficiency. It will be held in Auckland, New Zealand, in January of next year. The New Zealand Fellows are making special preparations to make the meeting worthy of the visit of their Australian colleagues. It is hoped that it will be attended by well-known surgeons from the Pacific coast of America, and perhaps by some surgeons from England. If possible, arrangements will be made

for Australian Fellows attending the meeting to travel to New Zealand on the same ship. It is the desire of the Council that as many surgeons as possible will be present at this meeting; it is likely to be held in New Zealand only about once in every ten years.

For the Executive Committee,

H. B. DEVINE,
Chairman.

Surgery in Other Countries.

[In this column will be published short résumés of articles likely to be of practical value from Journals published in other countries and not readily accessible to surgeons in Australia and New Zealand.]

Fatal Anaphylactic Shock.

Ricardo Lozano, of Zaragoza, Spain: *"Chascos y peligros de la hidatidosis: el 'shock' anafiláticо mortal"*, *Archivos Internacionales de la Hidatidosis*, Volume i, Fasciculus 1, December, 1934, pp. 95-99.

A robust looking tramway employee, aged twenty-seven, was admitted to hospital on April 16, 1934. Ten years before he had had pneumonia, followed by chronic bronchitis. Eighteen months previously a dull pain was noted in the right thorax; this had continued on and off and had been worse lately. Arms and legs often had a "pins and needles" feeling. The right thorax bulged slightly, and X ray examination revealed raising of right dome of diaphragm. The liver was slightly enlarged. The Casoni test gave an intensely positive reaction, followed by considerable œdema of the whole arm.

Operation was performed on April 25, 1934. It was intended to do a transthoracic marsupialization, and this was preceded by an exploratory puncture. Clear fluid escaped at high pressure. Five minutes later severe anaphylactic symptoms set in, with pallor and vomiting. Chloroform was administered, adrenaline was injected, also "Lobelin", and an incision was made, but the operation could not be proceeded with. The patient became profoundly collapsed, the breathing stopped, the skin, at first pale and sweaty, became cyanosed, and the heart, after beating for ten minutes longer, stopped beating. No autopsy was permitted.

L. E. Barnett.

Non-Parasitic Cysts of the Liver.

Ch. Lenormant and Jean Calvet: *"Les grands kystes non-parasitaires du foie"*, *Journal de Chirurgie*, May, 1935, page 715.

A case personally observed by the authors is described. A woman, aged forty-six years, who had been treated for two years or more for vague abdominal troubles, developed a large fluctuating swelling in the right hypochondrium. Laboratory tests for hydatid infection gave no reaction. Operation was performed on December 10, 1934; a transverse abdominal incision was made, the cyst was punctured, and 1,500 cubic centimetres of yellowish soupy fluid were evacuated. The cyst, which was found to extend deeply into the liver, was incised. It was a single cyst with a smooth supple wall of greyish colour. Other organs appeared normal. The cyst, after the removal of a salient portion, was marsupialized and drained, and convalescence was satisfactory, except for the long persistence of a sinus. The pathological report stated that the cyst wall was two to five millimetres thick and showed three layers from within outwards: (i) an epithelial layer resembling the lining of bile ducts, (ii) a fibrocellular layer, (iii) an endothelial layer. Bilirubin and cholesterin were present in the fluid, but no hydatid elements and no bacteria were found.

The authors give a *résumé* of nearly one hundred other cases referred to in medical literature with full bibliography, and quote much that has been written previously on the subject, especially by Costatini and Duboucher of

Algiers in the *Journal de Chirurgie*, by Margarucci in *Il Policlinico*, and by Jones in the *Annals of Surgery*—all in 1923.

The usual non-parasitic cyst of the liver is practically a benign cystic adenoma and is most common in females of middle age. Abdominal pain, swelling and digestive disturbances usually call attention to the condition, but cases are sometimes latent and may be discovered only by chance at operation or at autopsy. The clinical features indeed are very similar to those of hydatid cyst and can be differentiated only by the laboratory findings (failure of response to the Casoni test, the complement fixation test *et cetera*), and then not with absolute certainty.

Other cysts of the liver, though rare, may also occur and give difficulty in diagnosis, for example, lymphangioma, hæmangioma, bile-duct distension and dermoid cyst, and cysts of adjacent organs or tissues may easily enough be mistaken for liver cysts.

Marsupialization seems the safest treatment, though selected cases may be suitable for the more speedy technique of complete resection.

Multiple non-parasitic cysts of the liver are usually associated with congenital cystic kidneys, and are in this article only briefly referred to.

L. E. BARNETT.

HYDATID CYSTS OF THE MEDIASTINUM.

Professor G. Bolognesi: "Hydatid Cysts of the Mediastinum", *Zentralblatt für Chirurgie*, July 6, 1935, page 1581.

THE author, who is Director of the Surgical Clinic in the University of Siena, reports a hydatid cyst of the mediastinum (a rare location). The patient had been under observation in the clinic for several years; the article is illustrated by an instructive series of X ray photographs.

The patient, a woman aged fifty-three years, now much run down in health, had been ill on and off for nine years, suffering from attacks, especially after exertion, of retrosternal pain, faintness, dyspnœa and feverishness. Two years after onset of symptoms, X ray examination revealed a rounded shadow the size of a large orange in the left side of the thorax continuous with the heart shadow. It showed no respiratory, pulsation or deglütition movements. Laboratory investigation revealed no eosinophilia and no reaction to the complement fixation and Casoni tests. Nevertheless a provisional diagnosis of hydatid cyst of the mediastinum was made.

In the course of years the cyst gradually enlarged and eventually filled almost completely the whole of the left side of the thorax. The breath sounds of the left lung had completely disappeared, the heart was pushed far over to the right side, and the symptoms became so distressing that the patient consented to operation. On May 6, 1928, under ether anæsthesia, portions of the seventh and eighth ribs in the left axillary region were removed. The pleural cavity was opened and a small quantity of exudate escaped. A huge cyst could be felt bulging in the depths of the thorax. Pleural adhesions were scanty, so gauze was packed in and a two-stage operation was decided on. A fortnight later the cyst was opened with a cautery knife and the edges of the wound in the adventitia were sewn to the parietal muscles. A large amount of clear fluid was evacuated, and drainage was provided for by tube and gauze. During the next day or two membranes came away in large quantities, and it became evident that there was a fistulous communication with a bronchus. No irrigation was therefore attempted.

The diagnosis, confirmed at operation, was an enormous hydatid cyst of the mediastinum beginning in the left parapericardial region and expanding into the left side of the thorax, with displacement of the heart to the right, atelectasis of the left lung and slight pleuritic exudation.

The patient left hospital after two months, but had to attend the out-patient department for a very long time afterwards owing to trouble associated with the persisting bronchial fistula. Thoracoplasty was advised, but was declined by the patient. Ultimately a satisfactory return to health took place with restoration of the normal position and functioning of the heart and left lung.

Mediastinal hydatid cysts are very rare. This is the first case noted by the author among 65 cysts operated on. Colombani, of Dalmatia, records two among 147 cases.

The differential diagnosis has to be made from mediastinal dermoid, sarcoma, other tumours, and possibly aortic aneurysm. The guiding points are the slow development lasting for years, the X ray findings and the results of laboratory tests.

L. E. BARNETT.

THE EFFECT ON THE BRAIN AND CEREBRO-SPINAL FLUID OF SOLUTIONS OF DIFFERENT CONCENTRATIONS.

Privat-Dozent Dr. Jorns (The Surgical Clinic, University of Jena; Director, Professor N. Guleke): *"Die Wirkung anisotonischer Lösungen auf Gehirn und Liquor"*, *Der Chirurg*, April 1, 1935, page 201.

WITH a view to providing a rational basis for their use, Jorns discusses the osmotic effects on the brain and on the volume of the cerebro-spinal fluid of injecting solutions of different concentration. The course of events consequent on raising the osmotic pressure in the blood is as follows: Inflow of salt-free fluid from the tissues to the blood stream, dehydration of the tissues, shrinkage of organs and dilution of the blood, and, secondarily, diffusion of the osmotic substances into the tissues, causing tissue œdema. The effects to be expected from the solutions are limited to these processes, and in an hour or so the osmotic equilibrium is restored. The effect is general on the whole body, and any individual organ shares in it only to a relatively limited extent. The amount of fluid actually withdrawn from the cerebro-spinal system is limited to a few cubic centimetres.

The fact that the osmotic action does cause a fall in brain volume has been established clinically and experimentally. After discussion of its mechanism, Jorns sums it up in this fashion: physiologically, cerebro-spinal fluid is formed in the ventricular plexuses, and passes thence to the subarachnoid and cerebral spaces, where it is absorbed. In artificially produced hypertonia of the blood this circulation is reversed, the fluid being absorbed to an increased degree and its formation being diminished.

Therapeutically, hypotonic solutions, usually distilled water, have been employed with success by Leriche and Henschen in cases of traumatic fluid loss following the formation of internal or external cerebro-spinal fistulæ, or for the rarer traumatic conditions causing decreased production of cerebro-spinal fluid.

Hypertonic solution therapy is more comprehensive. The degree of effect depends on the difference produced between the solution pressures in the blood and in the tissues. Small amounts of high concentration are therefore more effective than are larger amounts in lower concentration. The solutions mainly used are: 10% to 30% sodium chloride in amounts of 10 to 50 cubic centimetres or more, given intravenously; hypertonic Ringer's solution (30% sodium chloride 18%, potassium chloride 0·84%, calcium chloride 0·5%), given intravenously; 40% to 50% grape sugar, given intravenously, in amounts of 50 to 100 cubic centimetres; or up to 60 grammes of magnesium sulphate in saturated solution, given *per rectum*.

Highly concentrated saline solutions, though very effective, carry a certain danger of secondary cerebral œdema, and the sugar solution is preferred. As much as 200 cubic centimetres of 50% sugar solution can be given by slow intravenous injection without risk. Magnesium sulphate acts well *per rectum*. It has been used in 15% solution intravenously also, up to 60 cubic centimetres of this solution being given.

The indications for the treatment are all conditions which cause cerebral œdema. Conditions in which pressure is due to an increased volume of cerebro-spinal fluid also respond to the therapy, though these may generally be more swiftly and easily relieved by spinal puncture. The transitory nature of the effects

produced must be remembered in using the treatment. After intravenous injection of 100 cubic centimetres of 50% sugar the effect is passed in forty-five to sixty minutes. None the less, in many cases the benefits are impressive and incontestable, naturally more so in acute emergencies than in chronic conditions. In cases of head injury, with cerebral pressure and doubtful localization, injection is especially useful, but it is best not started until the day following the accident, when shock is less evident, the presence of intracranial bleeding is eliminated, and localizing signs are more apparent. Shock, bleeding, vomiting and bodily dehydration are contraindications. To avoid the danger of over-dehydration, the cerebro-spinal fluid pressure should be controlled by a manometer.

In German clinics the treatment is widely used for these conditions and for post-contusional symptoms; also in attacks of acute *œdema cerebri* occurring in the pre-operative or post-operative course of a developing cerebral tumour. Inflammatory conditions of the cortex secondary to aural inflammations also give a good response to the injection of hypertonic solutions.

ARTHUR E. BROWN.

SYMPATHETIC CONTROL OF HOLLOW ORGANS.

Dr. H. W. Pässler, Chirurgischen Universitätsklinik zu Heidelberg: *"Die funktionellen Entleerungsstörungen von Speiserohre, Dickdarm und Blase (Kardiospasmus, Megacolon und Megacystis)"*, *Der Chirurg*, January 15, 1936, page 41.

PÄSSLER endeavours to correlate the various "idiopathic" dilatations of hollow organs, such as the œsophagus, colon and bladder, into one group of diseases having a common cause, a derangement of the normal balance between their parasympathetic and sympathetic control. His working out of the pathology suggests that in these hollow organs there is a "critical point" of filling or distension, and that when this is reached the reflex mechanism of emptying is called into action. It is the function of the sympathetic system to maintain this "critical point" at its optimum level for health. In some cases of sympathetic irritation this point is raised to an abnormally high level, with the result that the organ concerned becomes filled and distended far beyond its normal limits without the reflexes being stimulated to produce emptying.

Illustrating his views, he points out that after a forcible dilatation of the cardia in mega-œsophagus, though the functional condition is improved in that food now passes into the stomach, yet X ray examination shows very little actual anatomical improvement in the size and shape of the œsophagus. On the other hand, after sympathectomy, such as is performed in cutting the left gastric artery, true anatomical cure does follow. Pässler considers that the similar good results reported after Heller's (or Delbet's) operation of division of the œsophageal musculature are due more to section of sympathetic fibres during the procedure of mobilizing the œsophagus than to the actual procedure of cutting the muscle.

In discussing the colon and bladder, Pässler points out that dilatation of the bladder often occurs in those cases of megacolon in which the rectum is involved in the dilatation; and this is understandable since the superior hypogastric plexus supplies both viscera. What is more interesting is the fact that Etzel and also Gaensslen have published cases in which megacolon and mega-œsophagus have coexisted. Etzel alone has published four such cases, and this disposes of any supposition that such occurrences might be purely accidental. This suggests a more generalized disorder of the sympathetic system than has hitherto been envisaged; and Pässler suggests that other "idiopathic" dilatations of hollow organs, such as hydroureter and hydronephrosis and even congenital bronchiectasis, may be found to be explainable on the same basis.

Two interesting cases are reported in his article. The bladder of one patient, admitted to hospital with a diagnosis of "Hirschsprung's disease", was investigated and it was found that the "critical point" of filling was not reached even with a litre of fluid, while the internal pressure of the bladder was not

measurable until more than 300 cubic centimetres had been inserted. Fifteen weeks after resection of the presacral nerve, the desire to micturate was felt with 500 cubic centimetres, which is approximately normal, and bladder tone had so much improved that an internal pressure of nine centimetres was registered with only 100 cubic centimetres of fluid.

The other case is interesting because of the use of spinal anæsthesia. Spinal anæsthesia has been regarded as a valuable "therapeutic test" in sympathetic disorders of the lower segments. But in the case of megacolon and megacystis Pässler draws attention to the statements of Cassidly and Salkin that with

FIGURE I.

FIGURE II.

ordinary spinal anæsthesia the pelvic parasympathetic supply is blocked equally with the sympathetic, and the test is thus vitiated. This drawback is overcome by the use of Kirschner's air-replacement method of zonal anæsthesia. The effect of this method is well shown in the two illustrations reproduced. The first (Figure I) shows the colon of a twenty-one year old patient with megacolon, with three litres of contrast fluid run in. The second (Figure II) shows the same patient with the same fluid, twenty-five minutes after the institution of Kirschner's girdle anæsthesia. This patient was entirely cured by resection of the inferior mesenteric and superior hypogastric plexuses.

ARTHUR E. BROWN.

FUNCTIONAL TREATMENT OF FRACTURES OF THE VERTEBRAL COLUMN.

Professor Gorinevskaja and E. Drewing: "*Le traitement fonctionnel des fractures par compression de la colonne vertébrale*", *Lyon Chirurgical*, Volume xxxiii, January-February, 1936, page 44.

THE authors—Professor Gorinevskaja, Chief of the Gymnastic Therapeutic Department in the Traumatological Clinic, and E. Drewing, both at the Moscow Institute

Sklifassovsky of Traumatology and Immediate Surgery—propose an unusual method of treatment for compression fractures of the spinal column (mainly lumbar and lower thoracic), including those with paraplegia. The method consists of immediate gymnastic exercises in order to produce a "*corset musculaire*" instead of the more usual plaster bed, spinal jacket or orthopædic corset, which they absolutely condemn at any stage of the treatment as most dangerous. Such exercises, at the beginning, are specially directed towards holding the spinal column in hyperextension, thereby avoiding the danger of a secondary displacement. They quote Magnus (the German advocate of immediate massage, light, heat *et cetera*, as a method of treatment for a fractured spine) as authority for the view that the danger of the occurrence of such secondary displacements is very exaggerated, being only a slight possibility at the commencement. They claim that their method avoids bone and muscle atrophy and periarticular adhesions, and that it accelerates the formation and ossification of callus. Their method of immediate "functional treatment" is much more active than that of Magnus. They state that Magnus claimed by his method to reduce the recumbent

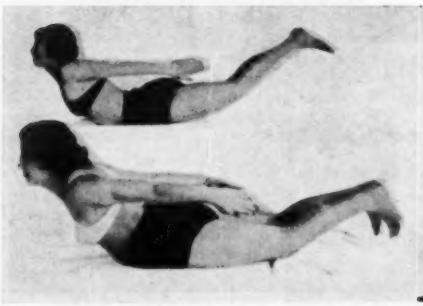

FIGURE I.

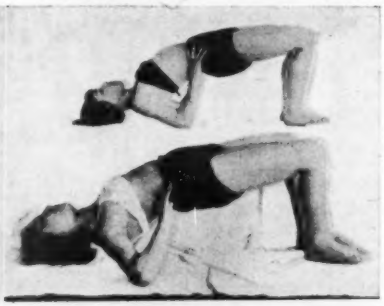

FIGURE II.

period to from six to eight weeks and the total period of disability to from three to four months. Further, Magnus, Haumann and Hempel, with a large experience, have come to the conclusion that compression fractures, properly treated, consolidate much more quickly than is generally believed. The patient lies on an inclined bed with the foot raised so that some extension is obtained. The first series of exercises on the bed is begun three to ten days after the accident, according to the age and general condition of the patient and the gravity of the condition. As groups of simple exercises are mastered, more complicated exercises are taught under guidance of the surgeon. At the end of the first month the second series follows and then the third. (See Figures I and II.) In the last series considerable effort and aptitude are required for the coordination of the movements. In the course of the second month each *séance* of exercises lasts thirty to thirty-five minutes, and they are carried out three times daily (still with the patient lying on the inclined bed). After two months the patient stands, with assistance, for from fifteen to twenty minutes, and after a further two to three weeks commences to walk. When this is done easily, the fourth series of exercises is carried out. The patient leaves hospital and continues to be under medical surveillance and exercises in a physical culture class under an instructor, where a number of people exercising together have a useful influence on one another.

The authors base the following conclusions upon three hundred and ten cases treated during the last four years: (i) The method of choice in the treatment of compression fractures of the spine is "*la méthode gymnastique*".

(ii) Treatment begins with the patient lying in extension in an ordinary bed and with no other apparatus. (iii) The movements strengthen different muscle groups, especially the extensor muscles of the back, producing *"le corset musculaire"*. (iv) In the presence of neurological signs, paralysis or paresis, the application of therapeutic gymnastics is of the greatest importance and is particularly recommended, but strict attention must be paid to the graduation of the effort in the exercises. The nervous impulses through the systematic movements directed towards the muscles accelerate the regenerative processes therein.

It remains to be seen whether this purely gymnastic method, which is a very active development of the Magnus passive treatment, is as safe and as certain as the method of immobilization in a plaster jacket *plus* gymnastics which is recommended by Watson-Jones, Böhler and others, and which is giving very excellent end results in a minimum of time. The reviewer has used the authors' method in two cases of fractured spine associated with paraplegia, with very encouraging results.

THOMAS KING.

Reviews.

LOCALIZED RAREFYING BONE CONDITIONS.

Localized Rarefying Conditions of Bone as Exemplified by Legg-Perthes' Disease, Osgood-Schlatter's Disease, Kümmell's Disease and Related Conditions. By E. S. J. KING, M.D., D.Sc., M.S. (Melbourne), F.R.C.S. (England), F.R.A.C.S.; 1935. London: Edward Arnold and Company. Medium 8vo, cloth; pp. xii + 400, with 70 diagrams. Price: 35s. net.

THIS book will, it is safe to predict, automatically take its place as the standard work on the subject of localized rarefying bone conditions, and will provide a sound base for future exploration. It is one which will appeal not only on account of its general interest, but because of its practical importance to the radiologist, the surgeon (especially the pædiatric and orthopædic surgeon) and the pathologist.

The Royal College of Surgeons of England made a happy choice when it selected as the subject of the essay for the Jacksonian Prize in 1933 "The Pathology, Diagnosis and Treatment of Localized Rarefying Changes in Bone as Exemplified by Legg-Perthes' Disease, Kümmell's Disease and Related Conditions". The scope of this title defines the range of the book (essentially the winning essay); the consideration of rarefactions belonging to the *osteitis fibrosa* group, even if localized, is excluded, though the "related conditions" involve the author in a discussion of results other than rarefaction.

Section I of the book is appropriately devoted to general consideration of the nature and behaviour of bony tissue. The clear historical treatment of views on the structure, development, physiology and pathology of the tissue includes a timely critical discussion of modern dogmatic humoralism. The fact that we derive most of our knowledge of the conditions from radiological observation gives occasion for a valuable chapter on the significance of radiographic findings and the importance of interpreting them accurately in terms of pathological processes, a problem to which later sections give due emphasis. The section on special radiographic features of the anatomy of certain bones shows, *inter alia*, the need for some review of accepted ideas on the times of appearance of centres of ossification.

In the second section of the book the author describes the rarefying changes affecting the growing portions of developing bone. These, under the name *osteochondritis juvenilis*, are admirably dealt with, first generally and then specifically, in each anatomical site. The author does welcome service in simplifying nomenclature: the list of synonyms at the head of each subsection should do much to resolve confusion resulting from a multitude of terms for the same condition. The historical matter is well balanced; the pathology (together with the morbid anatomy and histology when anything is known about them) is amply described and correlated with the radiological and clinical findings at the various stages; hypotheses are critically discussed. The differential diagnosis and treatment subsections bear the stamp of practical experience. The section ends with a thoughtful subsection on the relationship of generalized osteochondritis to other generalized diseases of bone.

In Section III the post-traumatic rarefactions in adult bone, and in Section IV those rarefactions of the articular surfaces which are associated with the occurrence of loose bodies in the joint, are considered with like thoroughness.

Throughout there is evidence that the author writes from his own experience, and, indeed, a careful perusal reveals a remarkable amount of new matter and original observation.

Apart from its intrinsic merit as a contribution to the subject, the completeness of the references (their compilation alone no mean task) will render it invaluable to inquirers in the same field. No error of reference has been detected, but there are some minor flaws in the titles that have been missed in the proofs.

The numerous and excellent illustrations are (with the exception of a few adapted diagrams) from the author's own material. The unusual wealth of apt quotation at the subsectional headings lends a pleasant variety to the text.

The publishers are to be congratulated on the quality of the reproduction and printing in this admirable compendium.

A TEXTBOOK OF BACTERIOLOGY.

A Textbook of Bacteriology. By THURMAN B. RICE, A.M., M.D.; 1935. Philadelphia and London: W. B. Saunders Company. Melbourne: W. Ramsay (Surgical) Proprietary, Limited. Super royal 8vo, pp. 551, with 121 illustrations. Price: 30s. net.

THE author of this textbook of bacteriology is specific as to his aim in writing it. It is intended to provide that knowledge of bacteriology which can be usefully applied by the practising American physician or surgeon. Within that limited sphere the book can be regarded as an almost complete success. The clinical applications of bacteriological knowledge are stressed throughout, and the theoretical and technical sides of the subject are only very lightly touched upon. There is much more discussion of the symptoms, treatment and epidemiological control of infectious diseases than is usual in a textbook of bacteriology.

In form, the book follows orthodox lines. After a few preliminary chapters on the general characteristics of bacteria, about half the book is devoted to systematic description of the different types of pathogenic microorganisms and the diseases they produce, protozoa, fungi and viruses being included, as well as bacteria. The final third of the book is devoted to immunological topics, as always with particular reference to their clinical application. The facts are well presented and accurate, but bacteriologists in touch with current developments would probably find the book rather out of date. There is a noteworthy absence of reference to some of the most interesting bacteriological work of the past few years. It is a little late to suggest after discussing *Hæmophilus influenzæ*

and *Leptospira icteroides* that filterable viruses may be the causes of influenza and yellow fever. The discussion of immunity is in terms of Ehrlich's diagrams, which seem a little naïve nowadays, though they are perhaps still the simplest way to introduce the conception of antigenic specificity. There is no mention of the bacterial polysaccharide haptenes, even in regard to the pneumococci.

Still, it is quite logical to argue that what interests research workers at any given period is precisely what should not be incorporated in a students' textbook. For the practitioner who wishes to refresh his memory in regard to the bacteriology of some clinical condition, without being overburdened with irrelevant detail, this is probably one of the most suitable books available.

REFLECTIONS OF A SURGEON.

Escritos Quirurgicos. By ARTEMIO ZENO; 1935. Rosario and Buenos Aires: Editorial Medica Lagos.

"ESCRITOS QUIRURGICOS" is a paper-bound volume of 560 pages, unillustrated, expounding the long and varied professional experience and the philosophical reflections of a busy and studious Argentine surgeon.

The author deals exhaustively and at times exhaustingly with a comprehensive variety of surgical subjects, but, strange to say, hydatid disease is conspicuous by its absence. One would have expected an Argentine surgeon to discourse interestingly upon some aspects at least of a malady so common in his country. There is, however, an excellent article on the non-parasitic cyst of the liver—cystic adenoma—and three personal cases are described. There is also a useful discussion of the pros and cons of a procedure that has some bearing on the treatment of abdominal hydatid infection, namely, lavage of the peritoneum with ether. The author quotes records of ill-effects and even fatalities from the use of this method, and thinks it is better avoided. Zeno is an ardent admirer of Arbuthnot Lane and has adopted wholeheartedly his views on the subject of intestinal stasis.

The outstanding feature of his book, however, is the author's advocacy of the ambulatory or "near" ambulatory treatment of operation cases.

DISEASES OF THE STOMACH AND DUODENUM.

The Stomach and Duodenum. By GEORGE B. EUSTERMAN, M.D., F.A.C.P.; DONALD C. BALFOUR, M.B., M.D. (Tor.), LL.D., F.A.C.S., F.R.A.C.S., and Members of the Staff, The Mayo Clinic and The Mayo Foundation for Medical Education and Research, Graduate School, University of Minnesota; 1936. Philadelphia and London: W. B. Saunders Company. Royal 8vo, pp. 958, with illustrations. Price: 63s. net.

THIS recently published book on the stomach and duodenum, by Dr. George Eusterman and Dr. Donald Balfour, respectively Chief of the Medical and Chief of the Surgical Section of the Mayo Clinic, assisted by the members of the staff of this clinic, is an epoch-making contribution to the surgery of these abdominal organs. This nine-hundred-page surgical work is appropriately dedicated to William J. and Charles Mayo; it will serve as a fitting reminder to the surgical world of the services to the art and science of surgery which have been rendered by these two famous surgeons, who still, in the twilight of their life's work, continue to reflect much surgical wisdom.

In this treatise, a team of specialists has systematized the actual practice of medicine and surgery in the field of gastro-duodenal disease, and has faithfully

presented, not the general opinion of a number of individual specialists, but the opinion of a group which has been working as one man on the patient in the attempt to give him the benefit of all that is known about the surgery of the stomach and the duodenum.

Special sections of the book are written by experts with a particular knowledge of the subject matter. For instance, Dwight L. Wilbur writes the section on the history of diseases of the stomach and duodenum, Walter C. Alvarez the section on applied physiology, William Carpenter MacCarty that on surgical pathology, B. R. Kirklin writes on radiological diagnosis, John S. Lundy on anæsthesia for surgical procedures involving the stomach and duodenum, Waltman Walters on total gastrectomy for carcinoma of the stomach, S. W. Harrington on diaphragmatic hernia, H. F. Helmholz on hypertrophic pyloric stenosis of infancy, A. B. Rivers on hæmorrhage from the stomach and duodenum, Howard R. Hartman on anæmia following operations on the stomach, and Willis S. Lemon on the nature of post-operative disease. These are all well-known names, and the authors are all men who can bring to bear on their subject an enormous experience, and one which they have accumulated while working in conjunction with their chiefs in medicine and surgery—the authors of the book.

A most interesting chapter is the one written by Alvarez on "The Applied Physiology of the Stomach and Duodenum". In it he explodes certain physiological shibboleths and enunciates new physiological principles, many of which are based on his own experimental work. The chemical changes produced in the body fluids by the secretion into the stomach of large amounts of sodium chloride and hydrochloric acid are dealt with in a very practical way. The physiological knowledge contained in this chapter lays the foundation for an easy understanding of the various clinical phenomena relating to diseases of the stomach and duodenum, the description of which makes up the main body of the book.

Following this chapter, most appropriately, is one written by S. T. Mann on the experimentally produced chronic gastric ulcer. It deals mainly with the factor of acidity in the production of chronic peptic ulcer, and with Mann's studies in the experimentally produced ulcer. Mann's studies go to show that the acid factor predominates in the cause of ulcer, and that the significance of this factor cannot be over-estimated. A careful study of these two chapters will throw much light on the causation and treatment of gastric ulcer.

William Carpenter MacCarty, a surgical pathologist, who has for years worked in conjunction with operating surgeons in the Mayo Clinic, gives clinical and statistical observations in relation to gastric and duodenal disease in all its stages—not in its terminal stage alone, to which in pathological observations the surgeon's attention is as a general rule directed.

In the section of the work devoted to anæsthesia for surgical procedures involving the stomach and duodenum, John S. Lundy makes many practical points. He thinks that abdominal wall nerve block, combined with nitrous oxide or with ethylene anæsthesia, is probably the safest procedure for the patient who constitutes a poor risk, and for whose operation relaxation is necessary. A "balanced anæsthesia", he feels, is the best routine anæsthesia.

The radiologist, as well as the surgeon and the physician, should read the chapter on "Roentgenologic Diagnosis", written by B. R. Kirklin. In it he will find much surgical radiological wisdom, the result of the close cooperation between a large operation clinic and an X ray department. "The most common Roentgenologic error", Kirklin writes, "is the diagnosis of disease when it is not present." He features the radiographic fallacies which can occur in the duodenum and prepyloric region of the stomach. Obviously, much of the work of his X ray clinic has consisted of observations of the post-operative functional behaviour of the stomach and duodenum, and this is most valuable information not only for the surgeon, but also for the consulting physician.

The authors analyse, from an ætiological standpoint, the syndrome dyspepsia —the result of gastric dysfunction and disease—and they clear up many misconceptions, and generally illuminate a cloudy subject. They devote a whole chapter to the significance of symptoms. There is also a chapter on the medical treatment of duodenal ulcer, giving in great detail what is regarded in the Mayo Clinic as "adequate medical treatment".

Many other chapters deal with the medical aspects of the stomach and duodenum. The most important are those on: "Hæmorrhage from the Stomach and Duodenum and its Treatment"; "Nutritional Disorders and Vitamin Deficiency States"; "Gastroptosis"; "Anæmia Following Operations on the Stomach".

The great feature, however, of the work is undoubtedly a masterful presentation of the surgery of the stomach and duodenum. Chapters on the identification of duodenal ulcer at operation, on the surgical treatment of duodenal ulcer, of gastric ulcer, and of gastric carcinoma, are replete with meticulous descriptions of symptoms and signs based on the observation of a great number of cases, and enriched with personal experiences. Full descriptions of operative treatment are given and are profusely illustrated; detailed descriptions of "living pathology" are included, with constantly occurring problems in diagnosis and their solution. All this information is, of course, taken from a surgical clinic, perhaps one of the best equipped and one of the richest in clinical material in the world.

Included in the book is an almost complete bibliography—in itself a stupendous work on such a subject as the stomach and duodenum.

The book is not one for the student, except for references. It is for the graduate; for the surgeon, for whom it is indispensable; for the consulting physician, to whom it will be invaluable; for the radiologist and the general practitioner, to whom it will be a luxury.

TREATMENT OF FRACTURES.

A Summary of the Treatment of Fractures. By R. BROOMHEAD, F.R.C.S.; 1935. Leeds: Jowett and Sowry, Limited. Demy 8vo, pp. 39. Price: 3s. 6d.

THIS small book on fractures and dislocations is divided into two parts. The first deals in a general way with varieties, diagnosis, complications, methods of union and general treatment. Of necessity, this part is but a series of headings. They would be of advantage to the senior student making a final revision before examination.

The second part sets out in table form the details of treatment carried out in the Orthopædic Department of the General Infirmary at Leeds. The tables include twelve columns detailing the site of fracture, method of splinting, and the length of time taken in the various stages of treatment. These tables form a convenient guide which is not always to be found in the more formal textbooks. The booklet can be well recommended.

Criticism can be directed at but a few details; for example, it is hard to believe that all patients should remain away from work for six to eight weeks on account of a Colles fracture. No mention is made of the ambulant method of treating some leg fractures, nor of reduction by gradual traction without preliminary manipulation, as is possible in some cases of fractured femur.

Notices.

REGISTRATION OF THE COLLEGE DIPLOMA OF FELLOWSHIP.

THE Council of the College wishes to announce that the New South Wales Medical Board has granted recognition to the College Diploma of Fellowship as a registrable additional qualification.

THE BRITISH POST-GRADUATE MEDICAL SCHOOL.

THE College wishes to draw attention to the announcement of the British Post-Graduate Medical School on page xxx of the advertisements.

NEW DEVELOPMENTS IN SURGICAL EQUIPMENT.

THE attention of Fellows is drawn to pages xviii and xxvi among the advertisements, which illustrate some recent developments in surgical equipment. The Editorial Committee is responsible for the selection of the equipment illustrated thereon. The publishers will be pleased, whenever possible, to supply the names and addresses of the manufacturers to anyone requiring such information.

Editorial Notices.

EDITORIAL communications should be addressed to the Chairman of the Editorial Committee, 57 Collins Street, Melbourne, or to any member of the Editorial Committee. It is understood that original articles forwarded for publication are offered to THE AUSTRALIAN AND NEW ZEALAND JOURNAL OF SURGERY solely, unless the contrary be stated.

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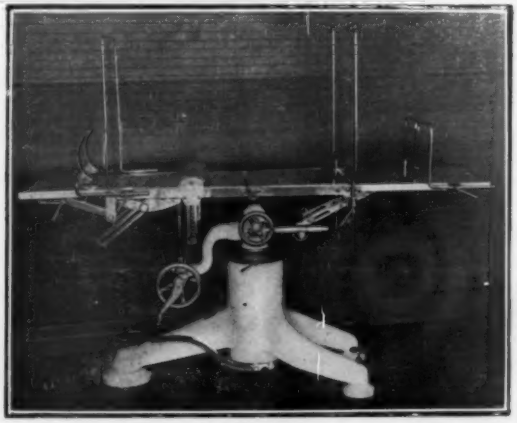

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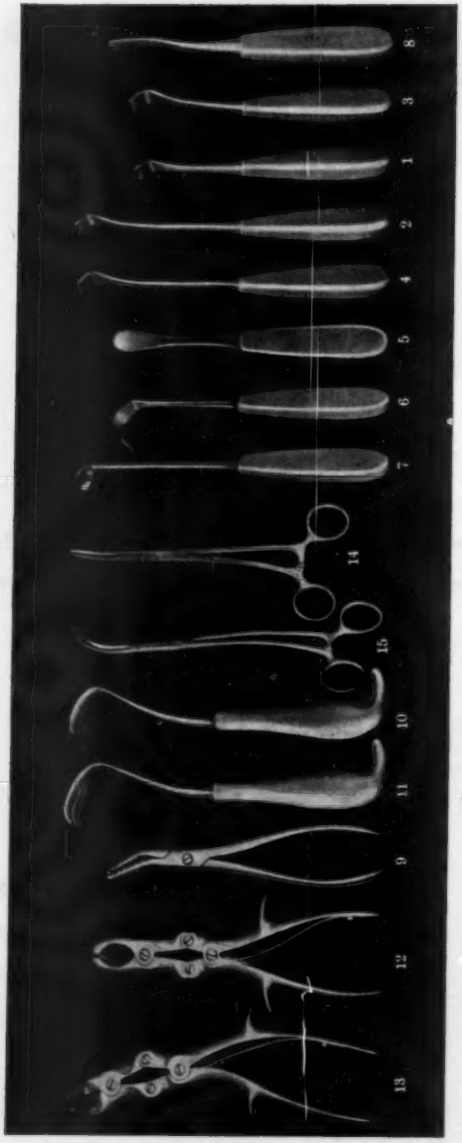

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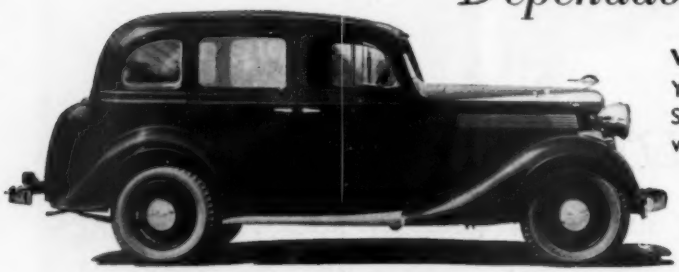

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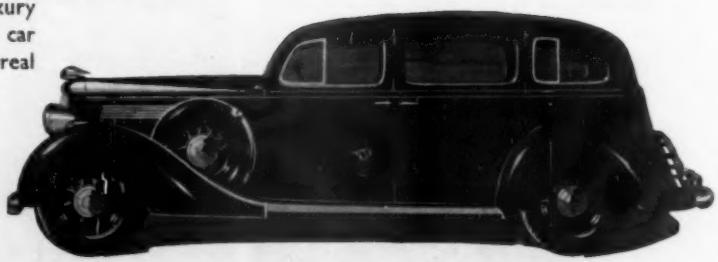

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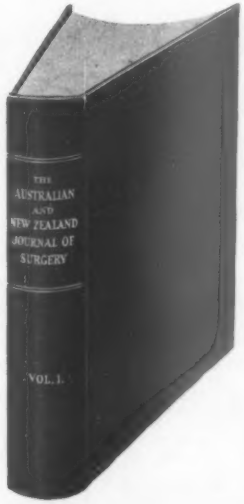

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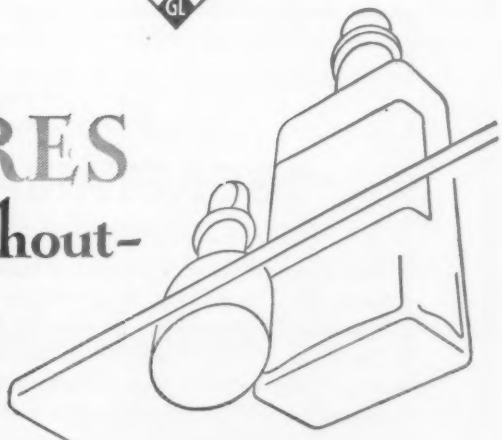

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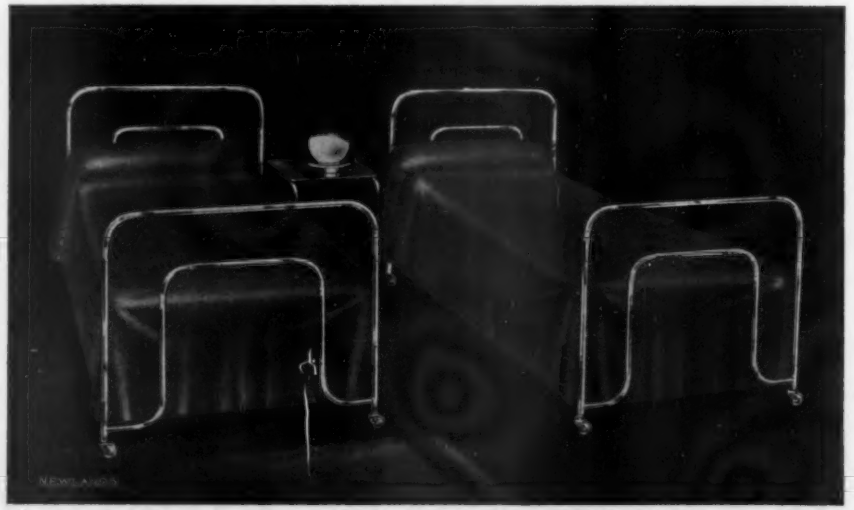

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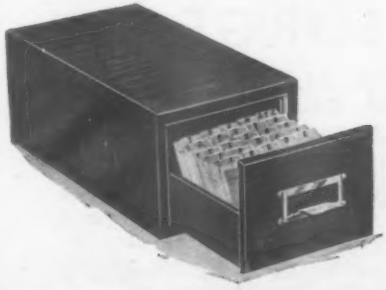

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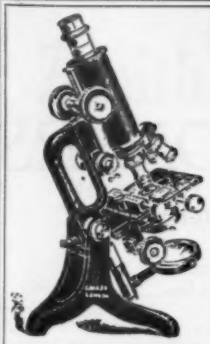

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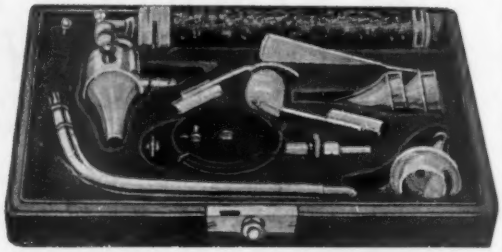

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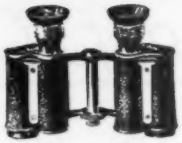

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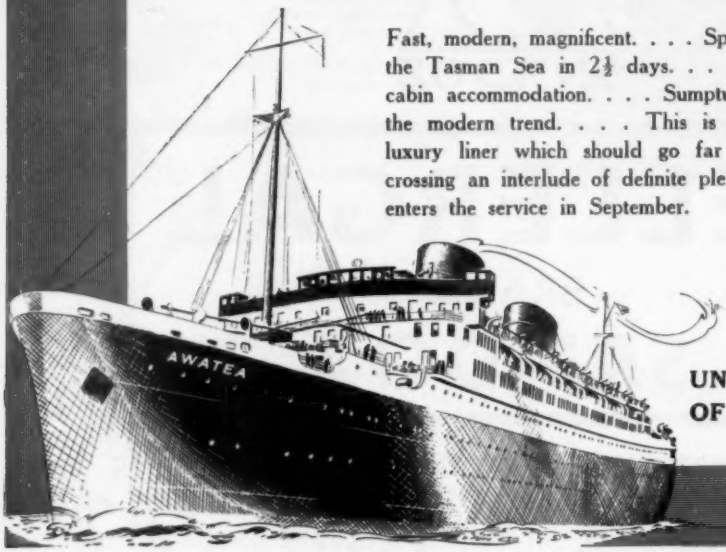

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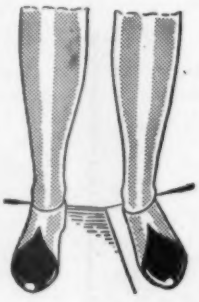

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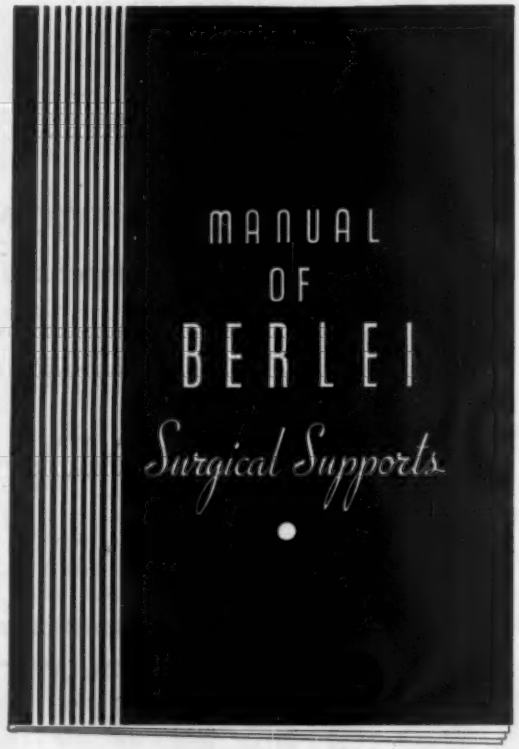

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